Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

****
* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	1
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	0.4
Peak Discharge	(m3/s)	:	0.9
Effective Storage	(Mil. m3)	:	0.6

Scheme Information		Full Supply Level (m) 394.0	384.7	375.5	366.2	356.9
Min. Operating Level	(m)	394.0	384.7	375.4	366.0	356.2
Rated Water Level	(m)	394.0	384.7	375.4	366.1	356.7
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	156.2	78.9	30.3	5.5
Reservoir Area	(km2)	15.4	10.0	6.5	3.5	1.0
Power Output						
Gross Head	(m)	44.0	34.7	25.4	16.1	6.7
Average Net Head	(m)	41.0	32.2	23.4	14.1	5.2
Firm Capacity	(MW)	0.1	0.1	0.1	0.1	0.0
Installed Capacity	(MW)	0.3	0.2	0.2	0.1	0.0
Firm Energy	(GWh)	1.3	1.0	0.7	0.4	0.2
Guaranteed Energy	(GWh)	1.2	0.9	0.7	0.4	0.1
Secondary Energy	(GWh)	0.7	0.5	0.4	0.2	0.1
Cost Estimate						
Dam	(Mil. US$)	47.5	30.3	17.7	9.1	3.7
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.6	1.4	1.2	1.0
Intake	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.1	0.1	0.1	0.1	0.0
Generating Equipment	(Mil. US$)	1.0	1.0	1.0	0.9	0.9
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.6	1.0	0.5	0.2
Direct Cost	(Mil. US$)	55.5	37.2	23.7	14.3	8.4
Compensation	(Mil. US$)	9.1	7.5	6.3	5.1	3.9
Administration	(Mil. US$)	2.8	1.9	1.2	0.7	0.4
Engineering Service	(Mil. US$)	3.5	3.0	2.6	2.3	2.1
Physical Contingency	(Mil. US$)	8.3	5.6	3.6	2.1	1.3
Project Cost	(Mil. US$)	79.2	55.2	37.4	24.6	16.1
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	6823.9	6050.8	5636.7	6151.2	10977.4

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

****
* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	2
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	0.7
Peak Discharge	(m3/s)	:	1.3
Effective Storage	(Mil. m3)	:	2.5

Scheme Information		Full Supply Level (m) 394.0	385.3	376.6	368.0	359.3
Min. Operating Level	(m)	393.9	385.1	376.3	367.3	356.2
Rated Water Level	(m)	394.0	385.2	376.5	367.7	358.3
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	162.3	86.5	36.7	7.4
Reservoir Area	(km2)	15.4	10.3	6.9	4.1	1.4
Power Output						
Gross Head	(m)	44.0	35.2	26.5	17.7	8.3
Average Net Head	(m)	41.0	32.7	24.5	15.7	6.8
Firm Capacity	(MW)	0.2	0.2	0.1	0.1	0.0
Installed Capacity	(MW)	0.4	0.4	0.3	0.2	0.1
Firm Energy	(GWh)	1.9	1.6	1.2	0.7	0.3
Guaranteed Energy	(GWh)	1.8	1.4	1.1	0.7	0.3
Secondary Energy	(GWh)	1.0	0.8	0.6	0.4	0.2
Cost Estimate						
Dam	(Mil. US$)	47.5	31.3	19.1	10.5	4.8
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.6	1.4	1.2	1.1
Intake	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Generating Equipment	(Mil. US$)	1.1	1.0	1.0	1.0	0.9
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.7	1.0	0.6	0.3
Direct Cost	(Mil. US$)	55.6	38.3	25.2	15.9	9.7
Compensation	(Mil. US$)	9.1	7.6	6.5	5.4	4.2
Administration	(Mil. US$)	2.8	1.9	1.3	0.8	0.5
Engineering Service	(Mil. US$)	3.5	3.1	2.7	2.4	2.1
Physical Contingency	(Mil. US$)	8.3	5.7	3.8	2.4	1.4
Project Cost	(Mil. US$)	79.4	56.7	39.5	26.8	18.0
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	4559.1	4071.8	3788.2	4004.7	6256.3

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

****
* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	3
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	0.9
Peak Discharge	(m3/s)	:	1.8
Effective Storage	(Mil. m3)	:	5.5

Scheme Information		Full Supply Level (m)				
		394.0	385.7	377.3	369.0	360.7
Min. Operating Level	(m)	393.7	385.1	376.5	367.5	356.2
Rated Water Level	(m)	393.9	385.5	377.1	368.5	359.2
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	165.8	91.0	40.4	10.4
Reservoir Area	(km2)	15.4	10.4	7.1	4.5	1.7
Power Output						
Gross Head	(m)	43.9	35.5	27.1	18.5	9.2
Average Net Head	(m)	40.9	33.0	25.1	16.5	7.7
Firm Capacity	(MW)	0.3	0.2	0.2	0.1	0.1
Installed Capacity	(MW)	0.6	0.5	0.4	0.2	0.1
Firm Energy	(GWh)	2.6	2.1	1.6	1.0	0.5
Guaranteed Energy	(GWh)	2.3	1.9	1.4	0.9	0.4
Secondary Energy	(GWh)	1.3	1.0	0.8	0.5	0.2
Cost Estimate						
Dam	(Mil. US$)	47.5	31.9	19.9	11.3	5.5
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.6	1.5	1.3	1.1
Intake	(Mil. US$)	0.0	0.0	0.0	0.0	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Generating Equipment	(Mil. US$)	1.2	1.1	1.1	1.0	0.9
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.7	1.1	0.6	0.3
Direct Cost	(Mil. US$)	55.8	39.0	26.2	16.9	10.5
Compensation	(Mil. US$)	9.1	7.7	6.6	5.5	4.4
Administration	(Mil. US$)	2.8	2.0	1.3	0.8	0.5
Engineering Service	(Mil. US$)	3.5	3.1	2.7	2.4	2.2
Physical Contingency	(Mil. US$)	8.4	5.9	3.9	2.5	1.6
Project Cost	(Mil. US$)	79.5	57.6	40.8	28.2	19.2
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	3428.9	3078.7	2869.0	3010.2	4408.9

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	4
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	1.1
Peak Discharge	(m3/s)	:	2.2
Effective Storage	(Mil. m3)	:	9.0

Scheme Information		Full Supply Level (m)				
		394.0	385.9	377.8	369.7	361.6
Min. Operating Level	(m)	393.5	385.0	376.4	367.2	356.2
Rated Water Level	(m)	393.8	385.6	377.4	368.9	359.8
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	168.3	94.1	43.1	13.9
Reservoir Area	(km2)	15.4	10.5	7.3	4.7	2.0
Power Output						
Cross Head	(m)	43.8	35.6	27.4	18.9	9.8
Average Net Head	(m)	40.8	33.1	25.4	16.9	8.3
Firm Capacity	(MW)	0.4	0.3	0.2	0.2	0.1
Installed Capacity	(MW)	0.7	0.6	0.5	0.3	0.2
Firm Energy	(GWh)	3.2	2.6	2.0	1.3	0.7
Guaranteed Energy	(GWh)	2.9	2.4	1.8	1.2	0.6
Secondary Energy	(GWh)	1.6	1.3	1.0	0.7	0.3
Cost Estimate						
Dam	(Mil. US$)	47.5	32.3	20.5	12.0	6.1
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.7	1.5	1.3	1.1
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.2	0.1	0.1	0.1	0.1
Generating Equipment	(Mil. US$)	1.3	1.2	1.1	1.0	1.0
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.7	1.1	0.7	0.4
Direct Cost	(Mil. US$)	55.9	39.5	26.9	17.6	11.1
Compensation	(Mil. US$)	9.1	7.7	6.6	5.6	4.5
Administration	(Mil. US$)	2.8	2.0	1.3	0.9	0.6
Engineering Service	(Mil. US$)	3.5	3.1	2.7	2.4	2.2
Physical Contingency	(Mil. US$)	8.4	5.9	4.0	2.6	1.7
Project Cost	(Mil. US$)	79.7	58.3	41.7	29.2	20.1
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	2751.3	2481.8	2319.5	2434.1	3408.3

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	5
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	1.3
Peak Discharge	(m3/s)	:	2.6
Effective Storage	(Mil. m3)	:	12.5

Scheme Information		Full Supply Level (m)				
		394.0	386.2	378.3	370.5	362.6
Min. Operating Level	(m)	393.3	384.9	376.4	367.4	356.2
Rated Water Level	(m)	393.8	385.7	377.7	369.4	360.5
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	170.8	97.2	47.0	17.4
Reservoir Area	(km2)	15.4	10.6	7.5	4.9	2.4
Power Output						
Gross Head	(m)	43.8	35.7	27.7	19.4	10.5
Average Net Head	(m)	40.8	33.2	25.7	17.4	8.5
Firm Capacity	(MW)	0.4	0.4	0.3	0.2	0.1
Installed Capacity	(MW)	0.9	0.7	0.6	0.4	0.2
Firm Energy	(GWh)	3.9	3.2	2.4	1.7	0.8
Guaranteed Energy	(GWh)	3.5	2.8	2.2	1.5	0.7
Secondary Energy	(GWh)	1.9	1.6	1.2	0.8	0.4
Cost Estimate						
Dam	(Mil. US$)	47.5	32.7	21.2	12.6	6.7
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.7	1.5	1.3	1.1
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.2	0.2	0.2	0.1	0.1
Generating Equipment	(Mil. US$)	1.4	1.3	1.2	1.1	1.0
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.7	1.1	0.7	0.4
Direct Cost	(Mil. US$)	56.0	40.1	27.7	18.4	11.8
Compensation	(Mil. US$)	9.1	7.8	6.7	5.7	4.7
Administration	(Mil. US$)	2.8	2.0	1.4	0.9	0.6
Engineering Service	(Mil. US$)	3.5	3.1	2.8	2.4	2.2
Physical Contingency	(Mil. US$)	8.4	6.0	4.2	2.8	1.8
Project Cost	(Mil. US$)	79.8	59.0	42.7	30.2	21.1
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	2299.6	2083.8	1953.6	2036.9	2923.3

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	6
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	1.5
Peak Discharge	(m3/s)	:	3.1
Effective Storage	(Mil. m3)	:	16.7

Scheme Information		Full Supply Level (m) 394.0	386.4	378.9	371.3	363.8
Min. Operating Level	(m)	393.1	384.8	376.3	367.7	356.2
Rated Water Level	(m)	393.7	385.9	378.0	370.1	361.2
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	173.8	100.9	52.6	21.6
Reservoir Area	(km2)	15.4	10.8	7.6	5.2	2.7
Power Output						
Gross Head	(m)	43.7	35.9	28.0	20.1	11.2
Average Net Head	(m)	40.7	33.4	26.0	18.1	9.2
Firm Capacity	(MW)	0.5	0.4	0.3	0.2	0.1
Installed Capacity	(MW)	1.0	0.8	0.7	0.5	0.2
Firm Energy	(GWh)	4.5	3.7	2.9	2.0	1.0
Guaranteed Energy	(GWh)	4.1	3.3	2.6	1.8	0.9
Secondary Energy	(GWh)	1.7	1.4	1.1	0.8	0.4
Cost Estimate						
Dam	(Mil. US$)	47.5	33.1	21.9	13.4	7.4
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.7	1.5	1.3	1.2
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.2	0.2	0.2	0.1	0.1
Generating Equipment	(Mil. US$)	1.4	1.3	1.2	1.1	1.0
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.8	1.2	0.7	0.4
Direct Cost	(Mil. US$)	56.1	40.7	28.6	19.4	12.7
Compensation	(Mil. US$)	9.1	7.8	6.8	5.8	4.8
Administration	(Mil. US$)	2.8	2.0	1.4	1.0	0.6
Engineering Service	(Mil. US$)	3.5	3.1	2.8	2.5	2.2
Physical Contingency	(Mil. US$)	8.4	6.1	4.3	2.9	1.9
Project Cost	(Mil. US$)	79.9	59.8	43.8	31.5	22.3
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	1978.9	1803.0	1696.8	1749.5	2427.8

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

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* SUMMARY TABLE OF OUTPUTS *
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Case No.		:	7
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	1.8
Peak Discharge	(m3/s)	:	3.5
Effective Storage	(Mil. m3)	:	26.6

Scheme Information		Full Supply Level (m) 394.0	387.1	380.3	373.4	366.5
Min. Operating Level	(m)	392.5	384.5	376.3	368.7	356.2
Rated Water Level	(m)	393.5	386.3	378.9	371.8	363.1
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	180.8	110.7	65.8	31.5
Reservoir Area	(km2)	15.4	11.1	8.1	5.9	3.7
Power Output						
Gross Head	(m)	43.5	36.3	28.9	21.8	13.1
Average Net Head	(m)	40.5	33.8	26.9	19.8	11.1
Firm Capacity	(MW)	0.6	0.5	0.4	0.3	0.2
Installed Capacity	(MW)	1.2	1.0	0.8	0.6	0.3
Firm Energy	(GWh)	5.1	4.3	3.4	2.5	1.4
Guaranteed Energy	(GWh)	4.6	3.9	3.1	2.3	1.3
Secondary Energy	(GWh)	1.4	1.1	0.9	0.7	0.4
Cost Estimate						
Dam	(Mil. US$)	47.5	34.3	23.7	15.5	9.3
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.7	1.5	1.4	1.2
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.2	0.2	0.2	0.2	0.1
Generating Equipment	(Mil. US$)	1.5	1.4	1.3	1.2	1.0
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.8	1.3	0.9	0.5
Direct Cost	(Mil. US$)	56.2	42.1	30.6	21.7	14.9
Compensation	(Mil. US$)	9.1	7.9	6.9	6.1	5.2
Administration	(Mil. US$)	2.8	2.1	1.5	1.1	0.7
Engineering Service	(Mil. US$)	3.5	3.2	2.8	2.6	2.3
Physical Contingency	(Mil. US$)	8.4	6.3	4.6	3.3	2.2
Project Cost	(Mil. US$)	80.1	61.6	46.6	34.6	25.3
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	1743.1	1608.0	1523.6	1540.7	2017.1

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	8
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	2.0
Peak Discharge	(m3/s)	:	4.0
Effective Storage	(Mil. m3)	:	37.7

Scheme Information		Full Supply Level (m) 394.0	387.9	381.8	375.7	369.6
Min. Operating Level	(m)	391.9	384.2	377.0	369.7	356.2
Rated Water Level	(m)	393.3	386.7	380.2	373.7	365.1
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	188.6	126.5	80.6	42.6
Reservoir Area	(km2)	15.4	11.4	8.8	6.6	4.7
Power Output						
Gross Head	(m)	43.3	36.7	30.2	23.7	15.1
Average Net Head	(m)	40.3	34.2	28.2	21.7	13.1
Firm Capacity	(MW)	0.7	0.6	0.5	0.4	0.2
Installed Capacity	(MW)	1.3	1.1	0.9	0.7	0.4
Firm Energy	(GWh)	5.8	4.9	4.0	3.1	1.9
Guaranteed Energy	(GWh)	5.2	4.4	3.6	2.8	1.7
Secondary Energy	(GWh)	1.0	0.9	0.7	0.6	0.3
Cost Estimate						
Dam	(Mil. US$)	47.5	35.7	25.9	18.0	11.9
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.7	1.6	1.4	1.3
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.3	0.2	0.2	0.2	0.2
Generating Equipment	(Mil. US$)	1.6	1.5	1.4	1.2	1.1
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	1.9	1.4	1.0	0.7
Direct Cost	(Mil. US$)	56.3	43.6	33.1	24.5	17.7
Compensation	(Mil. US$)	9.1	8.1	7.1	6.4	5.6
Administration	(Mil. US$)	2.8	2.2	1.7	1.2	0.9
Engineering Service	(Mil. US$)	3.5	3.2	2.9	2.7	2.4
Physical Contingency	(Mil. US$)	8.5	6.5	5.0	3.7	2.7
Project Cost	(Mil. US$)	80.2	63.6	49.7	38.4	29.2
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	1560.7	1459.4	1382.2	1388.0	1745.1

Scheme No. : 15
Project Name : Trombudo Central (2)
Type : Reservoir
Name of River : Trombudo

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	9
Catchment Area	(km2)	:	117.0
Average Runoff for Long Term	(m3/s)	:	2.7
Average Runoff for Critical Period	(m3/s)	:	2.2
Firm Discharge	(m3/s)	:	2.2
Peak Discharge	(m3/s)	:	4.4
Effective Storage	(Mil. m3)	:	61.6

Scheme Information		Full Supply Level (m) 394.0	388.9	383.8	378.6	373.5
Min. Operating Level	(m)	390.6	382.8	376.4	368.3	356.2
Rated Water Level	(m)	392.9	386.9	381.3	375.2	367.7
Tail Water Level	(m)	350.0	350.0	350.0	350.0	350.0
Reservoir Storage	(Mil. m3)	282.0	198.6	146.4	99.3	66.5
Reservoir Area	(km2)	15.4	11.8	9.6	7.6	5.9
Power Output						
Gross Head	(m)	42.9	36.9	31.3	25.2	17.7
Average Net Head	(m)	39.9	34.4	29.3	23.2	15.7
Firm Capacity	(MW)	0.7	0.6	0.5	0.4	0.3
Installed Capacity	(MW)	1.4	1.2	1.1	0.8	0.6
Firm Energy	(GWh)	6.3	5.5	4.6	3.7	2.5
Guaranteed Energy	(GWh)	5.7	4.9	4.2	3.3	2.2
Secondary Energy	(GWh)	0.7	0.6	0.5	0.4	0.3
Cost Estimate						
Dam	(Mil. US$)	47.5	37.4	28.8	21.6	15.6
Diversion Work	(Mil. US$)	1.3	1.3	1.3	1.3	1.3
Spillway	(Mil. US$)	1.8	1.7	1.6	1.5	1.4
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.2
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.5	0.5	0.5	0.5	0.4
Powerhouse	(Mil. US$)	0.3	0.3	0.2	0.2	0.2
Generating Equipment	(Mil. US$)	1.7	1.6	1.5	1.3	1.2
T/L & S/S	(Mil. US$)	0.5	0.5	0.5	0.5	0.5
Access Road	(Mil. US$)	0.0	0.0	0.0	0.0	0.0
Miscellaneous Cost	(Mil. US$)	2.5	2.0	1.5	1.2	0.9
Direct Cost	(Mil. US$)	56.5	45.6	36.3	28.4	21.9
Compensation	(Mil. US$)	9.1	8.2	7.4	6.7	6.1
Administration	(Mil. US$)	2.8	2.3	1.8	1.4	1.1
Engineering Service	(Mil. US$)	3.5	3.3	3.0	2.8	2.6
Physical Contingency	(Mil. US$)	8.5	6.8	5.4	4.3	3.3
Project Cost	(Mil. US$)	80.3	66.2	53.9	43.6	34.9
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	1423.0	1359.9	1299.7	1328.9	1565.4

Scheme No. : 16
Project Name : Botuvera
Type : Reservoir
Name of River : Itajai Mirim

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	1
Catchment Area	(km2)	:	625.0
Average Runoff for Long Term	(m3/s)	:	12.8
Average Runoff for Critical Period	(m3/s)	:	10.0
Firm Discharge	(m3/s)	:	4.0
Peak Discharge	(m3/s)	:	8.0
Effective Storage	(Mil. m3)	:	2.5

Scheme Information		Full Supply Level (m)				
		194.0	175.8	157.5	139.3	121.1
Min. Operating Level	(m)	193.6	175.2	156.7	137.9	118.8
Rated Water Level	(m)	193.9	175.6	157.2	138.8	120.3
Tail Water Level	(m)	99.0	99.0	99.0	99.0	99.0
Reservoir Storage	(Mil. m3)	259.2	156.5	86.9	40.7	11.5
Reservoir Area	(km2)	6.8	4.6	3.0	2.0	1.1
Power Output						
Gross Head	(m)	94.9	76.6	58.2	39.8	21.3
Average Net Head	(m)	91.4	73.6	55.7	37.8	19.8
Firm Capacity	(MW)	3.0	2.4	1.8	1.2	0.7
Installed Capacity	(MW)	6.0	4.8	3.7	2.5	1.3
Firm Energy	(GWh)	26.4	21.2	16.1	10.9	5.7
Guaranteed Energy	(GWh)	23.7	19.1	14.5	9.8	5.1
Secondary Energy	(GWh)	13.2	10.6	8.0	5.5	2.9
Cost Estimate						
Dam	(Mil. US$)	90.9	58.0	33.4	16.6	6.4
Diversion Work	(Mil. US$)	5.4	5.4	5.4	5.4	5.4
Spillway	(Mil. US$)	5.7	5.0	4.3	3.6	2.9
Intake	(Mil. US$)	0.1	0.1	0.1	0.1	0.1
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.2
Powerhouse	(Mil. US$)	0.7	0.6	0.5	0.4	0.3
Generating Equipment	(Mil. US$)	3.0	2.7	2.3	2.0	1.6
T/L & S/S	(Mil. US$)	3.7	3.7	3.7	3.7	3.7
Access Road	(Mil. US$)	0.9	0.9	0.9	0.9	0.9
Miscellaneous Cost	(Mil. US$)	4.8	3.2	1.9	1.0	0.5
Direct Cost	(Mil. US$)	115.9	80.1	53.1	34.3	22.3
Compensation	(Mil. US$)	4.2	3.6	3.0	2.5	2.1
Administration	(Mil. US$)	5.8	4.0	2.7	1.7	1.1
Engineering Service	(Mil. US$)	4.2	3.8	3.1	2.6	2.2
Physical Contingency	(Mil. US$)	17.4	12.0	8.0	5.1	3.4
Project Cost	(Mil. US$)	147.5	103.5	70.0	46.3	31.1
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	622.0	541.3	482.2	470.2	604.7

Scheme No. : 16
Project Name : Botuvera
Type : Reservoir
Name of River : Itajai Mirim

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	2
Catchment Area	(km2)	:	625.0
Average Runoff for Long Term	(m3/s)	:	12.8
Average Runoff for Critical Period	(m3/s)	:	10.0
Firm Discharge	(m3/s)	:	5.0
Peak Discharge	(m3/s)	:	10.0
Effective Storage	(Mil. m3)	:	15.7

Scheme Information		Full Supply Level (m)				
		194.0	178.1	162.2	146.3	130.4
Min. Operating Level	(m)	191.7	174.7	157.3	139.3	118.7
Rated Water Level	(m)	193.2	177.0	160.6	144.0	126.5
Tail Water Level	(m)	99.0	99.0	99.0	99.0	99.0
Reservoir Storage	(Mil. m3)	259.2	167.2	101.9	56.5	24.7
Reservoir Area	(km2)	6.8	4.8	3.4	2.3	1.5
Power Output						
Gross Head	(m)	94.2	78.0	61.6	45.0	27.5
Average Net Head	(m)	90.7	75.0	59.1	43.0	26.0
Firm Capacity	(MW)	3.7	3.1	2.4	1.8	1.1
Installed Capacity	(MW)	7.5	6.2	4.9	3.5	2.1
Firm Energy	(GWh)	32.7	27.0	21.3	15.5	9.4
Guaranteed Energy	(GWh)	29.4	24.3	19.2	13.9	8.4
Secondary Energy	(GWh)	16.4	13.5	10.6	7.7	4.7
Cost Estimate						
Dam	(Mil. US$)	90.9	61.7	38.9	22.2	10.9
Diversion Work	(Mil. US$)	5.4	5.4	5.4	5.4	5.4
Spillway	(Mil. US$)	5.7	5.1	4.5	3.9	3.3
Intake	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Headrace Tunnel	(Mil. US$)	0.2	0.2	0.2	0.2	0.2
Penstock Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Powerhouse	(Mil. US$)	0.8	0.7	0.6	0.5	0.4
Generating Equipment	(Mil. US$)	3.5	3.1	2.7	2.3	1.9
T/L & S/S	(Mil. US$)	3.7	3.7	3.7	3.7	3.7
Access Road	(Mil. US$)	0.9	0.9	0.9	0.9	0.9
Miscellaneous Cost	(Mil. US$)	4.9	3.4	2.2	1.3	0.7
Direct Cost	(Mil. US$)	116.6	84.7	59.7	41.0	27.9
Compensation	(Mil. US$)	4.2	3.7	3.2	2.7	2.3
Administration	(Mil. US$)	5.8	4.2	3.0	2.0	1.4
Engineering Service	(Mil. US$)	4.2	3.8	3.3	2.8	2.4
Physical Contingency	(Mil. US$)	17.5	12.7	9.0	6.1	4.2
Project Cost	(Mil. US$)	148.3	109.2	78.1	54.7	38.2
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	502.8	447.4	405.6	390.4	451.1

Scheme No. : 16
Project Name : Botuvera
Type : Reservoir
Name of River : Itajai Mirim

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* SUMMARY TABLE OF OUTPUTS *
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Case No.		:	3
Catchment Area	(km2)	:	625.0
Average Runoff for Long Term	(m3/s)	:	12.8
Average Runoff for Critical Period	(m3/s)	:	10.0
Firm Discharge	(m3/s)	:	6.0
Peak Discharge	(m3/s)	:	12.0
Effective Storage	(Mil. m3)	:	31.3

Scheme Information		Full Supply Level (m)				
		194.0	180.3	166.6	152.9	139.2
Min. Operating Level	(m)	189.3	173.6	157.4	140.0	119.0
Rated Water Level	(m)	192.4	178.0	163.5	148.6	132.5
Tail Water Level	(m)	99.0	99.0	99.0	99.0	99.0
Reservoir Storage	(Mil. m3)	259.2	177.7	117.7	73.4	40.5
Reservoir Area	(km2)	6.8	5.0	3.7	2.7	2.0
Power Output						
Gross Head	(m)	93.4	79.0	64.5	49.6	33.5
Average Net Head	(m)	89.9	76.0	62.0	47.6	31.5
Firm Capacity	(MW)	4.4	3.8	3.1	2.4	1.6
Installed Capacity	(MW)	8.9	7.5	6.1	4.7	3.1
Firm Energy	(GWh)	38.9	32.9	26.8	20.6	13.6
Guaranteed Energy	(GWh)	35.0	29.6	24.2	18.5	12.3
Secondary Energy	(GWh)	19.5	16.5	13.4	10.3	6.8
Cost Estimate						
Dam	(Mil. US$)	90.9	65.3	44.6	28.4	16.5
Diversion Work	(Mil. US$)	5.4	5.4	5.4	5.4	5.4
Spillway	(Mil. US$)	5.7	5.2	4.7	4.1	3.6
Intake	(Mil. US$)	0.2	0.2	0.3	0.3	0.3
Headrace Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Penstock Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Powerhouse	(Mil. US$)	0.9	0.8	0.8	0.7	0.6
Generating Equipment	(Mil. US$)	4.3	3.6	3.1	2.6	2.1
T/L & S/S	(Mil. US$)	3.7	3.7	3.7	3.7	3.7
Access Road	(Mil. US$)	0.9	0.9	0.9	0.9	0.9
Miscellaneous Cost	(Mil. US$)	4.9	3.6	2.5	1.7	1.0
Direct Cost	(Mil. US$)	117.5	89.3	66.4	48.4	34.8
Compensation	(Mil. US$)	4.2	3.7	3.3	2.9	2.5
Administration	(Mil. US$)	5.9	4.5	3.3	2.4	1.7
Engineering Service	(Mil. US$)	4.2	3.9	3.4	3.0	2.6
Physical Contingency	(Mil. US$)	17.6	13.4	10.0	7.3	5.2
Project Cost	(Mil. US$)	149.5	114.8	86.5	64.0	46.8
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	425.2	385.6	355.7	342.7	380.2

Scheme No. : 16
Project Name : Botuvera
Type : Reservoir
Name of River : Itajai Mirim

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* SUMMARY TABLE OF OUTPUTS *
****

Case No.		:	4
Catchment Area	(km2)	:	625.0
Average Runoff for Long Term	(m3/s)	:	12.8
Average Runoff for Critical Period	(m3/s)	:	10.0
Firm Discharge	(m3/s)	:	7.0
Peak Discharge	(m3/s)	:	14.0
Effective Storage	(Mil. m3)	:	49.5

Scheme Information		Full Supply Level (m)				
		194.0	182.3	170.7	159.0	147.4
Min. Operating Level	(m)	186.0	172.1	156.4	139.8	119.4
Rated Water Level	(m)	191.3	178.9	165.9	152.6	138.0
Tail Water Level	(m)	99.0	99.0	99.0	99.0	99.0
Reservoir Storage	(Mil. m3)	259.2	189.1	133.2	91.2	59.0
Reservoir Area	(km2)	6.8	5.3	4.1	3.1	2.4
Power Output						
Gross Head	(m)	92.3	79.9	66.9	53.6	39.0
Average Net Head	(m)	88.8	76.9	63.9	51.6	37.0
Firm Capacity	(MW)	5.1	4.4	3.7	3.0	2.1
Installed Capacity	(MW)	10.2	8.9	7.4	6.0	4.3
Firm Energy	(GWh)	44.8	38.8	32.3	26.1	18.7
Guaranteed Energy	(GWh)	40.4	34.9	29.0	23.5	16.8
Secondary Energy	(GWh)	18.6	16.1	13.4	10.8	7.7
Cost Estimate						
Dam	(Mil. US$)	90.9	68.8	50.3	35.1	23.2
Diversion Work	(Mil. US$)	5.4	5.4	5.4	5.4	5.4
Spillway	(Mil. US$)	5.7	5.3	4.8	4.4	3.9
Intake	(Mil. US$)	0.3	0.3	0.3	0.4	0.4
Headrace Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Penstock Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Powerhouse	(Mil. US$)	1.2	1.0	0.9	0.8	0.7
Generating Equipment	(Mil. US$)	5.0	4.3	3.5	3.0	2.5
T/L & S/S	(Mil. US$)	3.7	3.7	3.7	3.7	3.7
Access Road	(Mil. US$)	0.9	0.9	0.9	0.9	0.9
Miscellaneous Cost	(Mil. US$)	4.9	3.7	2.8	2.0	1.4
Direct Cost	(Mil. US$)	118.7	94.0	73.3	56.3	42.7
Compensation	(Mil. US$)	4.2	3.8	3.4	3.1	2.8
Administration	(Mil. US$)	5.9	4.7	3.7	2.8	2.1
Engineering Service	(Mil. US$)	4.2	4.0	3.6	3.2	2.8
Physical Contingency	(Mil. US$)	17.8	14.1	11.0	8.4	6.4
Project Cost	(Mil. US$)	150.9	120.6	94.9	73.9	56.8
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	372.6	343.4	325.1	313.1	336.0

Scheme No. : 16
Project Name : Botuvera
Type : Reservoir
Name of River : Itajai Mirim

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* SUMMARY TABLE OF OUTPUTS *
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Case No.		:	5
Catchment Area	(km2)	:	625.0
Average Runoff for Long Term	(m3/s)	:	12.8
Average Runoff for Critical Period	(m3/s)	:	10.0
Firm Discharge	(m3/s)	:	8.0
Peak Discharge	(m3/s)	:	16.0
Effective Storage	(Mil. m3)	:	116.2

Scheme Information		Full Supply Level (m)				
		194.0	187.7	181.4	175.1	168.9
Min. Operating Level	(m)	172.8	162.5	151.0	137.5	119.6
Rated Water Level	(m)	186.9	179.3	171.3	162.6	152.5
Tail Water Level	(m)	99.0	99.0	99.0	99.0	99.0
Reservoir Storage	(Mil. m3)	259.2	219.2	184.0	153.7	125.9
Reservoir Area	(km2)	6.8	5.9	5.2	4.5	3.9
Power Output						
Gross Head	(m)	87.9	80.3	72.3	63.6	53.5
Average Net Head	(m)	84.9	77.3	69.3	61.1	51.5
Firm Capacity	(MW)	5.6	5.1	4.6	4.0	3.4
Installed Capacity	(MW)	11.2	10.2	9.1	8.0	6.8
Firm Energy	(GWh)	49.0	44.6	40.0	35.2	29.7
Guaranteed Energy	(GWh)	44.1	40.1	36.0	31.7	26.7
Secondary Energy	(GWh)	14.7	13.4	12.0	10.6	8.9
Cost Estimate						
Dam	(Mil. US$)	90.9	78.5	67.2	57.0	47.7
Diversion Work	(Mil. US$)	5.4	5.4	5.4	5.4	5.4
Spillway	(Mil. US$)	5.7	5.5	5.2	5.0	4.7
Intake	(Mil. US$)	0.4	0.4	0.5	0.5	0.6
Headrace Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Penstock Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Powerhouse	(Mil. US$)	1.4	1.3	1.0	1.0	0.9
Generating Equipment	(Mil. US$)	5.2	5.0	4.4	3.8	3.3
T/L & S/S	(Mil. US$)	3.7	3.7	3.7	3.7	3.7
Access Road	(Mil. US$)	0.9	0.9	0.9	0.9	0.9
Miscellaneous Cost	(Mil. US$)	4.9	4.3	3.7	3.2	2.7
Direct Cost	(Mil. US$)	119.2	105.6	92.7	81.1	70.5
Compensation	(Mil. US$)	4.2	4.0	3.8	3.6	3.4
Administration	(Mil. US$)	6.0	5.3	4.6	4.1	3.5
Engineering Service	(Mil. US$)	4.2	4.1	3.9	3.8	3.5
Physical Contingency	(Mil. US$)	17.9	15.8	13.9	12.2	10.6
Project Cost	(Mil. US$)	151.5	134.8	118.9	104.7	91.5
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	343.2	335.6	330.3	329.6	342.2

Scheme No. : 16
Project Name : Botuvera
Type : Reservoir
Name of River : Itajai Mirim

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* SUMMARY TABLE OF OUTPUTS *
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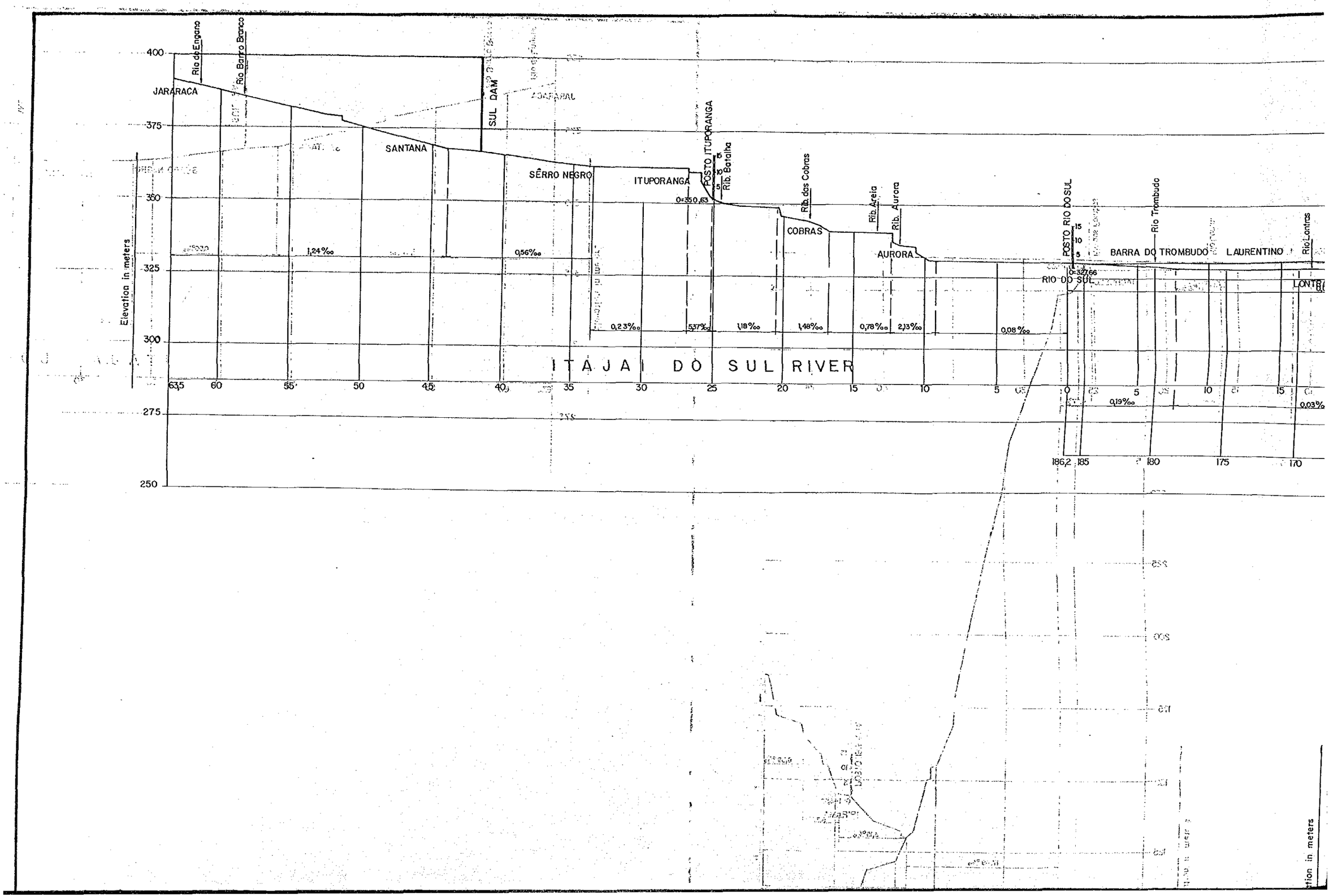
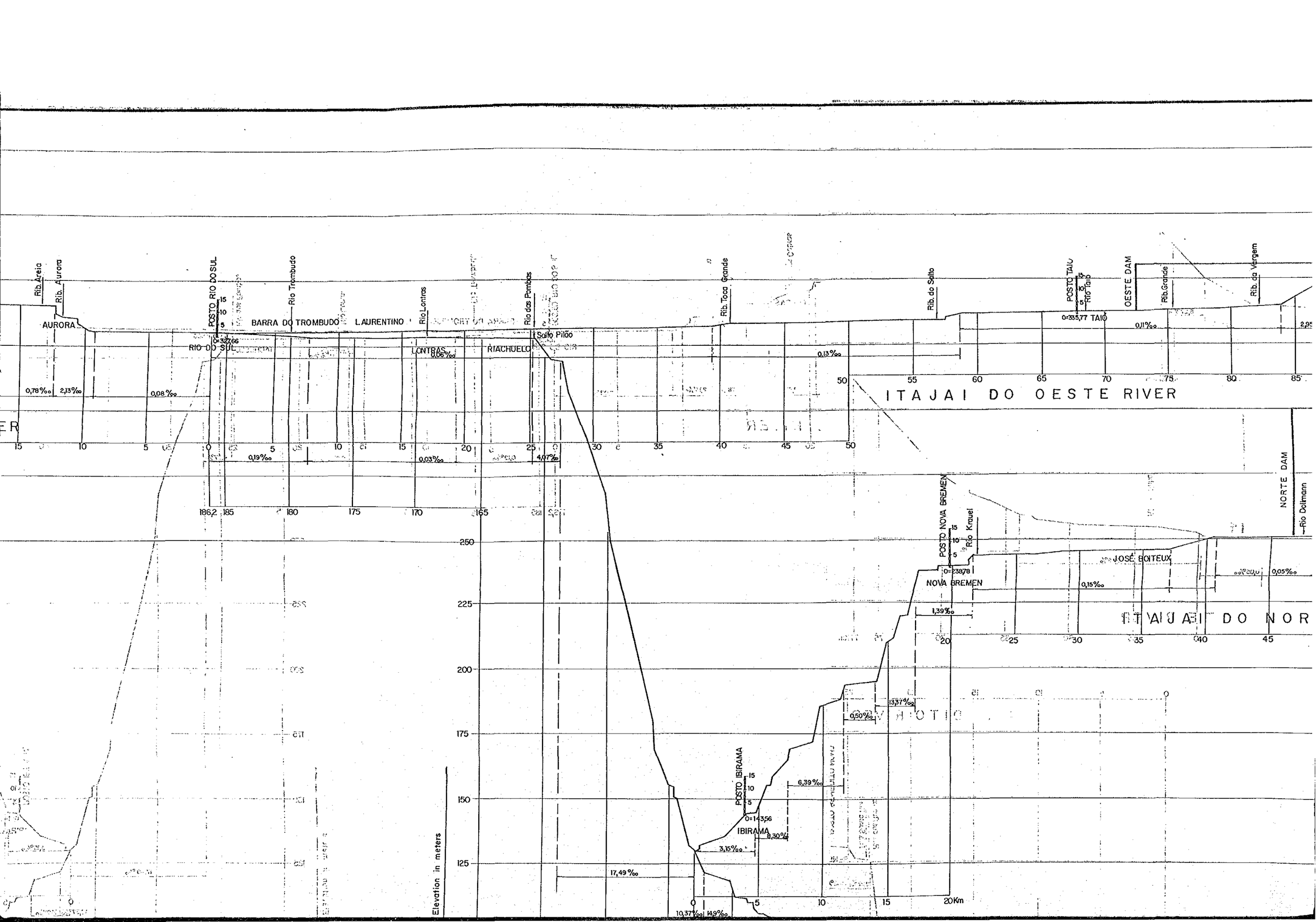
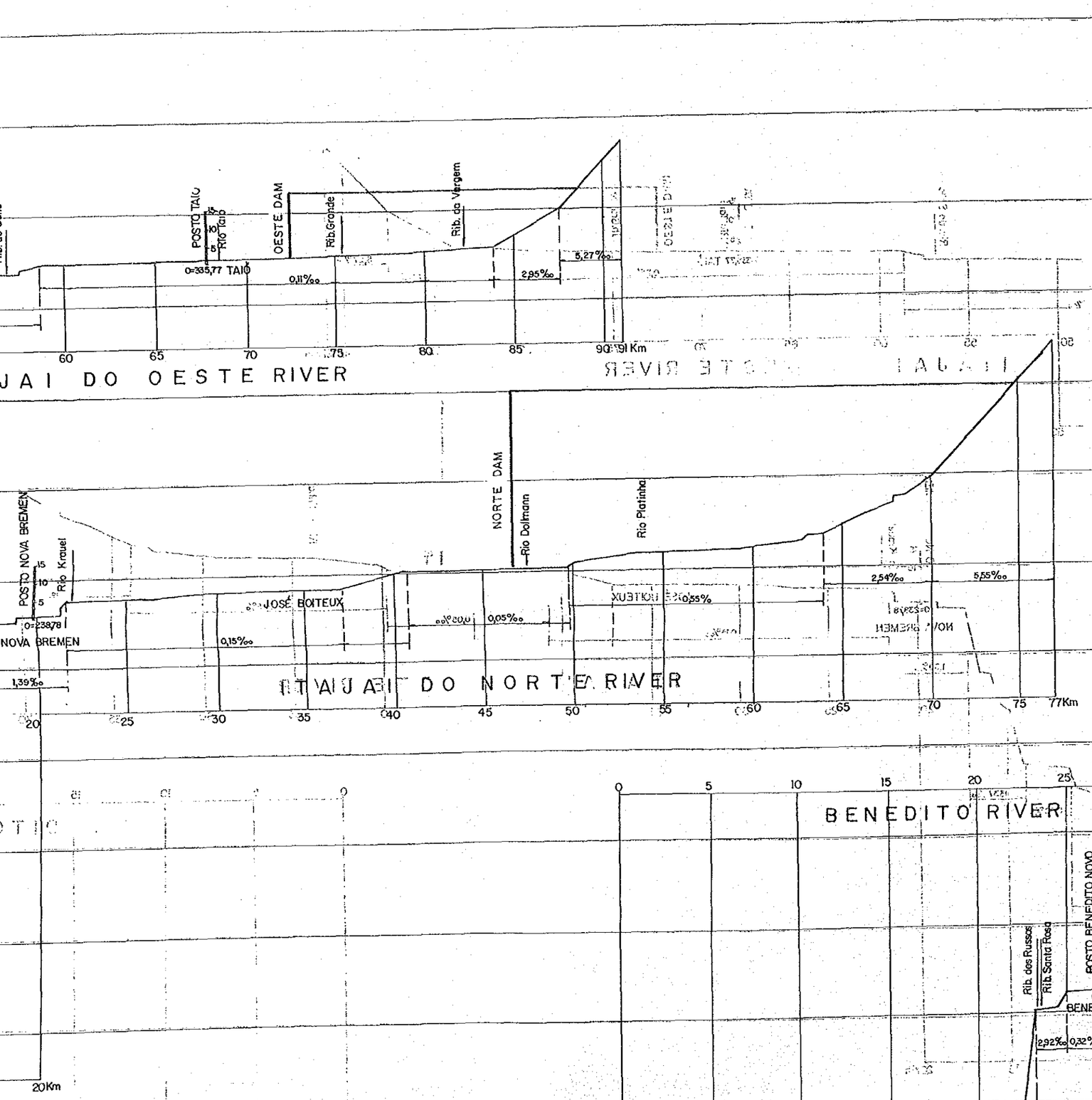
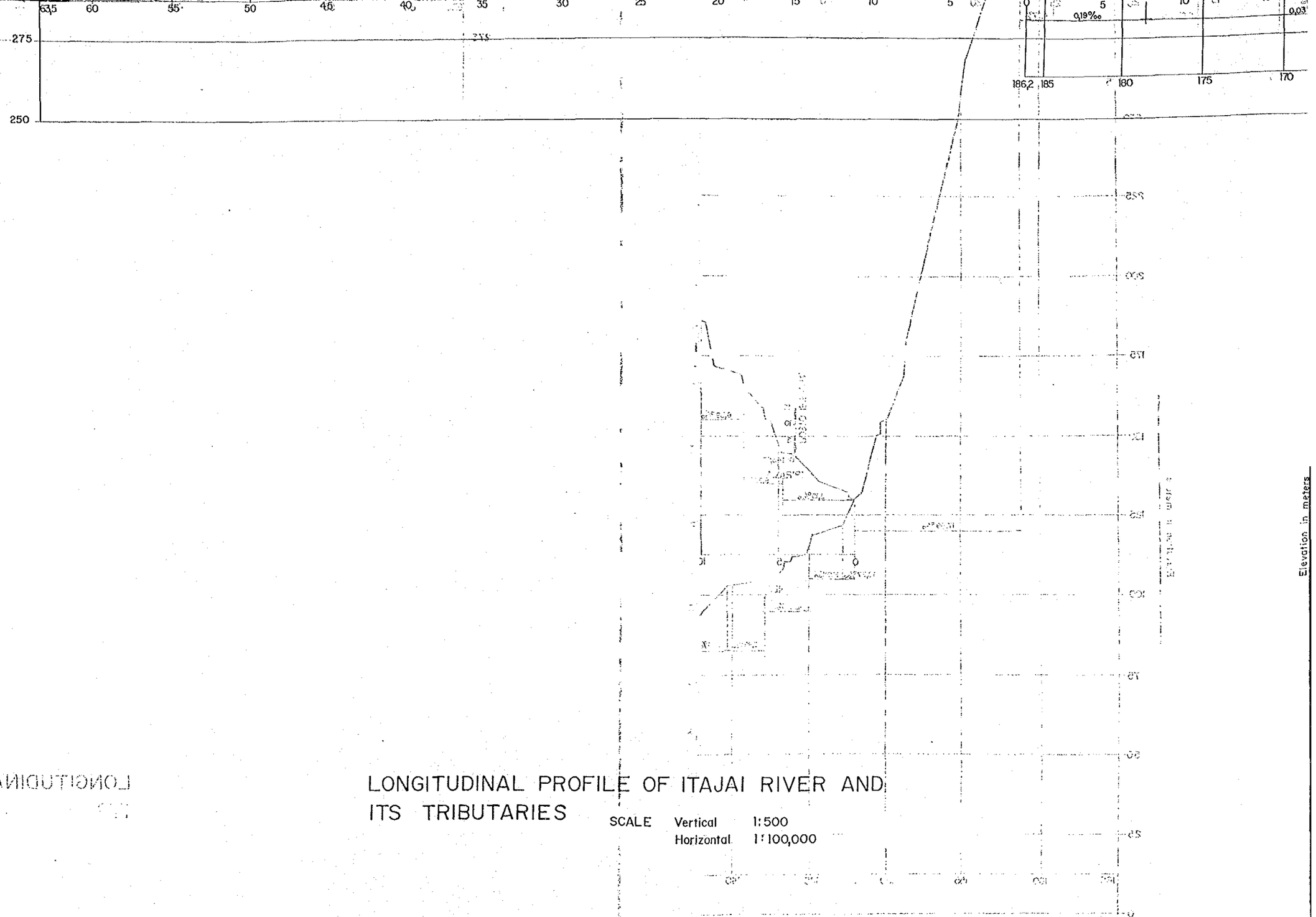
Case No.		:	6
Catchment Area	(km2)	:	625.0
Average Runoff for Long Term	(m3/s)	:	12.8
Average Runoff for Critical Period	(m3/s)	:	10.0
Firm Discharge	(m3/s)	:	9.0
Peak Discharge	(m3/s)	:	18.0
Effective Storage	(Mil. m3)	:	194.3

Scheme Information		Full Supply Level (m) 194.0	191.8	189.5	187.3	185.0
Min. Operating Level	(m)	150.0	143.3	136.1	128.9	119.9
Rated Water Level	(m)	179.3	175.6	171.7	167.8	163.3
Tail Water Level	(m)	99.0	99.0	99.0	99.0	99.0
Reservoir Storage	(Mil. m3)	259.2	244.0	229.3	216.8	204.2
Reservoir Area	(km2)	6.8	6.4	6.1	5.9	5.6
Power Output						
Gross Head	(m)	80.3	76.6	72.7	68.8	64.3
Average Net Head	(m)	77.3	73.6	69.7	66.3	61.8
Firm Capacity	(MW)	5.7	5.5	5.2	4.9	4.6
Installed Capacity	(MW)	11.5	10.9	10.3	9.8	9.2
Firm Energy	(GWh)	50.2	47.8	45.2	43.0	40.1
Guaranteed Energy	(GWh)	45.2	43.0	40.7	38.7	36.1
Secondary Energy	(GWh)	10.6	10.1	9.6	9.1	8.5
Cost Estimate						
Dam	(Mil. US$)	90.9	86.3	81.9	77.7	73.6
Diversion Work	(Mil. US$)	5.4	5.4	5.4	5.4	5.4
Spillway	(Mil. US$)	5.7	5.6	5.5	5.5	5.4
Intake	(Mil. US$)	0.6	0.6	0.6	0.6	0.7
Headrace Tunnel	(Mil. US$)	0.4	0.4	0.4	0.4	0.4
Penstock Tunnel	(Mil. US$)	0.3	0.3	0.3	0.3	0.3
Powerhouse	(Mil. US$)	1.4	1.4	1.3	1.3	1.1
Generating Equipment	(Mil. US$)	5.3	5.2	5.0	4.8	4.4
T/L & S/S	(Mil. US$)	3.7	3.7	3.7	3.7	3.7
Access Road	(Mil. US$)	0.9	0.9	0.9	0.9	0.9
Miscellaneous Cost	(Mil. US$)	4.9	4.7	4.5	4.2	4.0
Direct Cost	(Mil. US$)	119.5	114.5	109.6	104.8	99.8
Compensation	(Mil. US$)	4.2	4.2	4.1	4.0	3.9
Administration	(Mil. US$)	6.0	5.7	5.5	5.2	5.0
Engineering Service	(Mil. US$)	4.2	4.2	4.1	4.1	4.0
Physical Contingency	(Mil. US$)	17.9	17.2	16.4	15.7	15.0
Project Cost	(Mil. US$)	151.9	145.7	139.7	133.8	127.7
Evaluation Indices						
Unit Cost of Guaranteed Energy	(US$/MWh)	336.9	339.6	343.9	346.2	354.3


Rio do Engano
Rio Barro Branco
JARARACA
SUL DAM
SANTANA
SÊRRO NEGRO
ITUPORANGA
POSTO ITUPORANGA
Rib. Batalha
Rib. das Cobras
COBRAS
Rib. Areia
Rib. Aurora
AURORA
POSTO RIO DO SUL
RIO DO SUL
Rio Trombudo
BARRA DO TROMBUDO
LAURENTINO
Rio Lontras
Elevation in meters
400
375
360
325
300
275
250
1,24‰
0,56‰
0,23‰
5,37‰
1,18‰
1,48‰
0,78‰
2,13‰
0,08‰
0,19‰
0,03‰
ITAJAI DO SUL RIVER

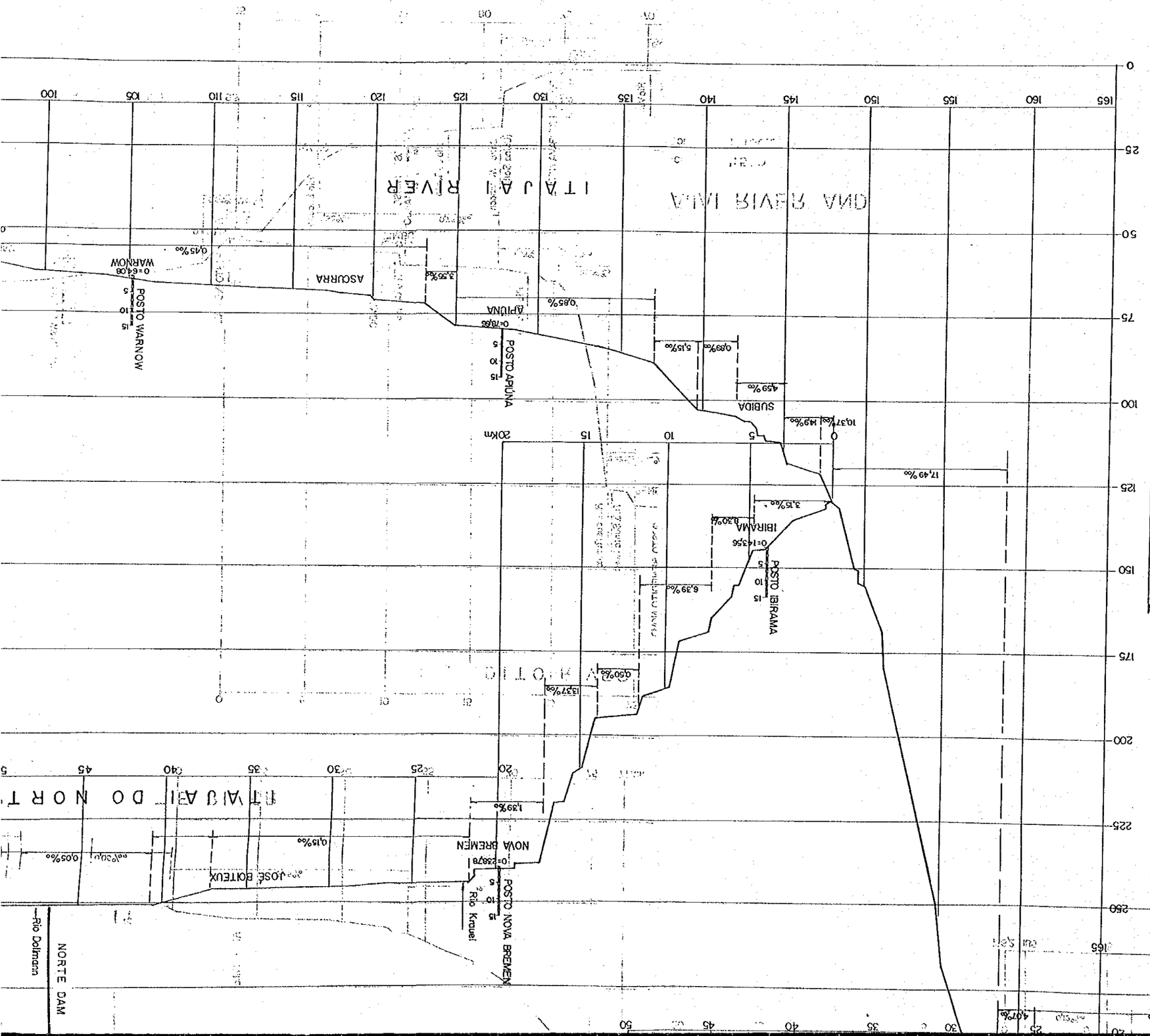

Rib. Areia
Rib. Aurora
AURORA
POSTO RIO DO SUL
15
10
5
0=327,66
RIO DO SUL
BARRA DO TROMBUDO
Rio Trombudo
LAURENTINO
Rio Lontras
LONTRAS
0,06‰
Rio das Pombas
RIACHUELO
Salto Pilão
Rib. Toca Grande
Rib. do Salto
POSTO TAIÓ
Rio Taió
0=335,77 TAIÓ
OESTE DAM
Rib. Grande
Rib. da Vargem
0,78‰
2,13‰
0,08‰
0,19‰
0,03‰
4,07‰
0,13‰
0,11‰
ITAJAI DO OESTE RIVER
NORTE DAM
Rio Dollmann
POSTO NOVA BREMEN
Rio Krauel
0=238,78
NOVA BREMEN
JOSÉ BOITEUX
0,15‰
0,05‰
1,39‰
ITAJAI DO NOR
13,37‰
0,50‰
POSTO IBIRAMA
0=143,56
IBIRAMA
6,39‰
8,30‰
3,15‰
17,49‰
10,37‰
14,9‰
Elevation in meters
186,2
250
225
200
175
150
125
20Km

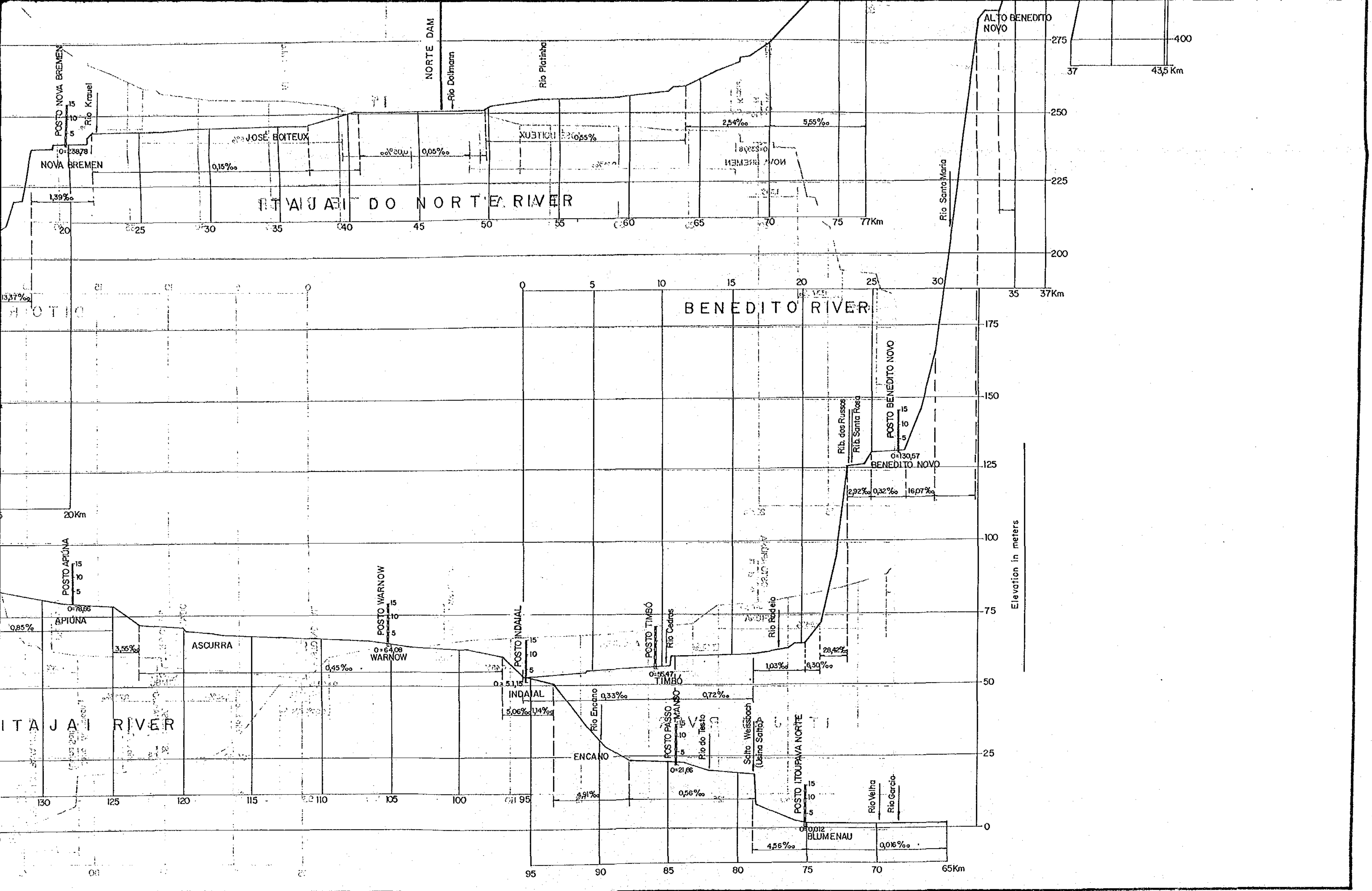

POSTO TAIÓ
Rio Taió
OESTE DAM
Rib. Grande
Rib. da Vargem
0=335,77 TAIÓ
0,11‰
2,95‰
5,27‰
60
65
70
75
80
85
90 91 Km
JAI DO OESTE RIVER
NORTE DAM
Rio Dollmann
Rio Platinha
POSTO NOVA BREMEN
Rio Krauel
0=238,78
NOVA BREMEN
JOSÉ BOITEUX
0,15‰
0,05‰
0,55‰
2,54‰
5,55‰
1,39‰
20
25
30
35
40
45
50
55
60
65
70
75
77Km
ITAJAÍ DO NORTE RIVER
0
5
10
15
20
25
30
35
37Km
BENEDITO RIVER
ALTO BENEDITO NOVO
Rio São João
37
43,5 Km
Rio Santa Maria
Rib. dos Russos
Rib. Santa Rosa
POSTO BENEDITO NOVO
0=130,57
BENEDITO NOVO
2,92‰
0,32‰
16,07‰
20Km
400
375
350
325
300
275
250
225
200
175
150
125
100
425
500
475
450
425
400



LONGITUDINAL PROFILE OF ITAJAI RIVER AND ITS TRIBUTARIES

SCALE Vertical 1:500
Horizontal 1:100,000


ITAJAI RIVER
ASCURRA
POSTO WARNOW
APIÚNA
POSTO APIÚNA
SUBIDA
POSTO IBIRAMA
NOVA BREMEN
POSTO NOVA BREMEN
José Boiteux
Rio Krauel
Rio Dollmann
NORTE DAM
Elevation in meters



ITAJAÍ DO NORTE RIVER
BENEDITO RIVER
ITAJAÍ RIVER
NORTE DAM
Rio Dollmann
Rio Platinha
POSTO NOVA BREMEN
Rio Krauel
0=238,78
NOVA BREMEN
JOSÉ BOITEUX
1,39‰
0,15‰
0,05‰
0,55‰
2,54‰
5,55‰
77Km
ALTO BENEDITO NOVO
37
43,5 Km
37Km
Rio Santa Maria
13,37‰
20Km
Rib. dos Russos
Rib. Santa Rosa
POSTO BENEDITO NOVO
0=130,57
BENEDITO NOVO
2,92‰
0,32‰
16,07‰
Elevation in meters
POSTO APIÚNA
0=78,65
APIÚNA
0,85‰
3,55‰
ASCURRA
POSTO WARNOW
0=64,08
WARNOW
0,45‰
POSTO INDAIAL
0=51,15
INDAIAL
5,06‰
1,14‰
POSTO TIMBÓ
Rio Cedros
0=55,47
TIMBÓ
0,33‰
0,72‰
Rio Rodeio
1,03‰
6,30‰
28,42‰
Rio Encano
ENCANO
4,91‰
POSTO PASSO MANSO
0=21,66
Rio do Testo
0,56‰
Salto Weissbach (Usina Salto)
POSTO ITOUPAVA NORTE
0=0,012
BLUMENAU
4,56‰
Rio Velha
Rio Garcia
0,016‰
65Km