

b) **Case-B**

The results are shown in below and more detailed information are shown in **Table 18.4-3, Table 18.4-6 and Table 18.4-7.**

| Case | DSC | FIRR | Levelized Financial Generation Cost * | FIRR for BOT Period (25 years) |
|--------|------|---------|---------------------------------------|--------------------------------|
| Base | 0.93 | -6.58% | 63.06 \$/MWh | 10.33% |
| Case 1 | 0.85 | -13.31% | 67.64 \$/MWh | 8.84% |
| Case 2 | 0.86 | -12.06% | 66.90 \$/MWh | 9.07% |

* with 10 % discount rate for the project life time (50 years)

Although DSC and FIRR have slightly improved in comparison with those of the preceding two(2) project, the both indicators are still less than feasible conditions. FIRR for the BOT period has just cleared 10% for the base case. The parameters which would satisfy the feasible condition for the base case seem to be still unrealistic. Therefore, the project to be implemented by BOT method is deemed to be difficult from the financial viewpoint.

| Parameters | Values | DSC | FIRR | Generation Cost | FIRR (BOT) |
|-----------------------------------|-----------------------------|------|--------|-----------------|------------|
| Construction Cost | 281.56 M.US\$ (35% less) | 1.52 | 14.92% | 42.79 \$/MWh | 20.34% |
| Exporting Power Tariff Escalation | 1.0% to 10.0% | 1.51 | 10.67% | 79.79 \$/MWh | 21.27% |
| Interest Rate | not reach feasible | - | - | - | - |

18.4.2 Xe Namnoy (Midstream)

(1) Basic Conditions of Xe Namnoy (Midstream)

The project consists of following characteristics.

- Installed Capacity 238 MW
- Firm Capacity 230 MW
- Salable Energy 936.3 GWh
- Construction Cost 281.81 M.US\$

More detailed conditions are shown in **Table 18.4-8.**

(2) Results of Financial Analysis and Sensitivity Test

a) Case-A

The results are shown in below and more detailed information are shown in Table 18.4-9, Table 18.4-11 and Table 18.4-12.

| Case | DSC | FIRR | Levelized Financial Generation Cost * |
|--------|------|--------|---------------------------------------|
| Base | 2.12 | 43.45% | 39.86 \$/MWh |
| Case 1 | 1.84 | 38.75% | 44.71 \$/MWh |
| Case 2 | 1.88 | 39.46% | 43.92 \$/MWh |

* with 10 % discount rate for the project life time (50 years)

DSC and FIRR indicate the most highest values among the three (3) project sites (four plans). The project is expected excellent return.

b) Case-B

The results are shown in below and more detailed information are shown in Table 18.4-10, Table 18.4-13 and Table 18.4-14.

| Case | DSC | FIRR | Levelized Financial Generation Cost * | FIRR for BOT Period (25 years) |
|--------|------|--------|---------------------------------------|--------------------------------|
| Base | 1.11 | 2.76% | 54.80 \$/MWh | 13.60% |
| Case 1 | 0.97 | -3.73% | 60.83 \$/MWh | 11.15% |
| Case 2 | 0.99 | -2.62% | 59.86 \$/MWh | 11.51% |

* with 10 % discount rate for the project life time (50 years)

Although DSC and FIRR indicate the highest performance among the all, the both indicators are still less than feasible conditions. The parameters satisfying the feasible condition as described below seem boundary between the probability and the unrealistic values for the base case. Therefore it seems to be difficult to conclude whether the BOT method is feasible or not under the proposed conditions by MIH.

| Parameters | Values | DSC | FIRR | Generation Cost | FIRR (BOT) |
|--------------------------------------|-----------------------------|------|--------|-----------------|------------|
| Construction Cost | 211.36 M.US\$ (25% less) | 1.55 | 15.37% | 42.39 \$/MWh | 20.61% |
| Exporting Power Tariff Escalation | 1.0% to 7.0% | 1.53 | 12.19% | 61.39 \$/MWh | 20.83% |
| Interest Rate | 10.0% to 1.75% | 1.50 | 2.12% | 42.65 \$/MWh | 13.39% |

Table 18.4-1 Basic Conditions for Xe Namnoy
(Midstream + Downstream)

| Items | Value and Conditions | Remarks |
|---|--|---|
| Installed Capacity | 305 MW | |
| Firm Capacity | 296 MW | Peak 8 Hours |
| Generation Energy | 1,384 GWh | Annual Average Energy |
| Plant Available Factor | 97.373 % | |
| Sending-end Energy (Salable Energy) | 1,231.8 GWh | G.Energy x {1- (St.Use + T/D Loss)} |
| Construction Cost including Associated T/L | 433.22 M.US\$ F/C: 367.09 M.US\$ L/C: 66.13 M.US\$ 1,420.39 \$/kW | subject to price escalation F/C: 2.8 % L/C: 4.5 % |
| Construction Period | 5 years * | including Preparatory Works |

* F/C: 8.55, 15.28, 27.93, 30.94, 17.30 (%)

L/C: 14.19, 17.45, 26.27, 27.56, 14.53 (%)

Table 18.4-2 Financial Analysis (1/4) Summary of Financial Analysis

| | | | |
|--|-------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (M+D) | |
| Case: - A (Base) | | | |
| Construction Cost | 1,420.39 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 100.0% | 0.0% | |
| Debt / Equity | Debt | Equity | |
| | 90.0% | 10.0% | |
| Installed Capacity | 305.0 MW | | |
| Generation Energy | 1,384.0 GWh | | |
| Sending-end Energy | 1,231.8 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 433.22 M.US\$ | | |
| After Price Escalation | 540.27 M.US\$ | | |
| Financial Budget | 617.96 M.US\$ | | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 54.02 | 0.00 |
| | Loan Amount | 486.25 | 0.00 |
| | IDC | 77.69 | 0.00 |
| | Royalty | - | 0.00 |
| | Total | 617.96 | 0.00 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 0.00% | | |
| Financial Indices | | | |
| Averaged Debt Service Coverage | | 1.75 | |
| Financial Internal Rate of Return | | 37.28% | |
| FIRR Calculation Period | | 25 years | |
| BOT Period | | | |
| BOT Period | | -- Years | |
| FIRR for the BOT Period | | - | |
| General Inflation | | | |
| Foreign | | 2.80% | |
| Domestic | | 4.50% | |
| Financial Conditions | | | |
| Interest Rate for IDC | | 6.00% | |
| Interest after Operation | | 6.00% | |
| Repayment Period | | 25 yr | |
| Graced Period | | 5 yr | |
| Government Own finance | | 10.00% | |
| Income Statement | | | |
| | | | M.US\$ |
| Sales Revenue | | 4,161.65 | |
| Operating Expense | | 2,882.59 | |
| Financial Expense | | 350.11 | |
| Net Income before Tax | | 928.95 | |
| Income Tax | | (181.62) | |
| Net Income | | 747.33 | |
| To the Government | | | |
| | | | M.US\$ |
| Royalty | | 0 | |
| Income Tax | | 181.616 | |
| Interest Payment to Equity | | - | |
| Net Income | | 181.616 | |
| Financial Generation Cost in | | | |
| Year 0 for the project life time | | 46.51 | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-2 Financial Analysis (2/4) Construction Disbursement and Loan Amount

Case: - A (Base)

| Dam Site: | Xe Namnoy (M+D) | | Equity Proportions | | Price Escalation per annum | | Finance Condition | | Total Construction Cost (M.US\$) | | | |
|-------------------|-----------------|--------------------------|--------------------|---------------------|--|------------------|-------------------|---------|----------------------------------|---------|---------|--------|
| | Installed | 305.00 MW | Lao PDR | 100.0% | F/C Portion | 2.8% | IDC | 6.00 % | Finance Items | Lao PDR | PRV SCT | Total |
| Generation Energy | 1,384.0 GWh | Private | 0.0% | L/C Portion | 4.5% <td>Interest Rate</td> <td>25 years</td> <td>6.00 %</td> <td>Own Finance</td> <td>54.02</td> <td>0.00</td> <td>54.02</td> | Interest Rate | 25 years | 6.00 % | Own Finance | 54.02 | 0.00 | 54.02 |
| Sell Energy (GWh) | 1,231.8 | Debt/Equity Ratio | 90.0% | Exporting Ratio | 100.0% | Repayment Period | 5 years | 10.00 % | Principal Loan | 486.25 | 0.00 | 486.25 |
| Project Cost | 1420.39 \$/Kw | Debt | 10.0% | Exp. Price (\$/MWh) | 52.410 | Graced Period | 5 years | | IDC | 77.69 | 0.00 | 77.69 |
| F/C | 367.09 M.US\$ | Equity | 0.0% | Dom. Price (\$/MWh) | 34.330 | LAO Own Finance | | | Total | 617.96 | 0.00 | 617.96 |
| L/C | 66.13 M.US\$ | Royalty for Construction | | | | | | | Equity / Royalty Fee | 0.00 | 0.00 | - |
| Total | 433.22 M.US\$ | Royalty from Operation | | | | | | | | | | |

| Year | Disbursement before Escalation | | Price Index | | Disbursement after Escalation | | Total Disburse | Finance Proportion | | | Own Finance Portion | | | Loan Portion | | | Loan Cumulative | | | IDC | | | Royalty Fee | | | | | |
|------|--------------------------------|--------|-------------|--------|-------------------------------|--------|----------------|--------------------|--------|------------------------------|---------------------|--------|---------|--------------|--------|---------|-----------------|--------|---------|--------|--------|---------|-------------|--------|------|------|------|------|
| | for F/C | | for L/C | | for F/C | | | for L/C | | Inc. Equity financed by Loan | | | Lao PDR | | | PRV SCT | | | Lao PDR | | | PRV SCT | | | | | | |
| | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | | M.US\$ | | | | |
| -10 | 0.00 | 0.00 | 1.0000 | 1.0000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| -9 | 0.00 | 0.00 | 1.0280 | 1.0450 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -8 | 0.00 | 0.00 | 1.0568 | 1.0920 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -7 | 0.00 | 0.00 | 1.0864 | 1.1412 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -6 | 0.00 | 0.00 | 1.1168 | 1.1925 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -5 | 31.39 | 9.38 | 1.1481 | 1.2462 | 36.04 | 11.69 | 47.73 | 47.73 | 0.00 | 4.77 | 0.00 | 4.77 | 0.00 | 0.00 | 0.00 | 42.96 | 0.00 | 42.96 | 0.00 | 0.00 | 0.00 | 0.00 | 2.58 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -4 | 56.09 | 11.54 | 1.1802 | 1.3023 | 66.20 | 15.03 | 81.23 | 81.23 | 0.00 | 8.12 | 0.00 | 8.12 | 0.00 | 0.00 | 0.00 | 73.11 | 0.00 | 116.07 | 0.00 | 0.00 | 0.00 | 0.00 | 6.96 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -3 | 102.53 | 17.37 | 1.2133 | 1.3609 | 124.40 | 23.64 | 148.04 | 148.04 | 0.00 | 14.80 | 0.00 | 14.80 | 0.00 | 0.00 | 0.00 | 133.24 | 0.00 | 249.31 | 0.00 | 0.00 | 0.00 | 0.00 | 14.96 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -2 | 113.58 | 18.23 | 1.2472 | 1.4221 | 141.66 | 25.92 | 167.58 | 167.58 | -0.00 | 16.76 | 0.00 | 16.76 | 0.00 | 0.00 | 0.00 | 150.82 | -0.00 | 400.13 | 0.00 | 0.00 | 0.00 | 0.00 | 24.01 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -1 | 63.50 | 9.61 | 1.2821 | 1.4861 | 81.41 | 14.28 | 95.69 | 95.69 | 0.00 | 9.57 | 0.00 | 9.57 | 0.00 | 0.00 | 0.00 | 86.12 | 0.00 | 486.25 | 0.00 | 0.00 | 0.00 | 0.00 | 29.18 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 0 | 0.00 | 0.00 | 1.3180 | 1.5630 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Sum | 367.09 | 66.13 | | | 449.71 | 90.56 | 540.27 | 540.27 | 0.00 | 54.02 | 0.00 | 54.02 | 0.00 | 0.00 | 0.00 | 496.25 | 0.00 | 77.69 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 77.69 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 18.4-2 Financial Analysis (3/4) Income Statement

| Year | Selling Revenue | | Sales Revenue | O/M Cost | Royalty | Y. Start Fixed Asset | Depreciation | Y. End Fixed Asset | Net Operation Income | Principal Repayment | Cum. of P. Repayment | Interest Payment | Income before Tax | Income Tax | Net Income after Tax | Current Asset in Cash | Debt Service Ratio | Export Price DSC=1.5 |
|------|-----------------|--------------|---------------|----------|---------|----------------------|--------------|--------------------|----------------------|---------------------|----------------------|------------------|-------------------|------------|----------------------|-----------------------|--------------------|----------------------|
| | Export GWh | Domestic GWh | | | | | | | | | | | | | | | | |
| 0 | 1231.8 | 0.0 | 52.41 | 34.33 | 64.56 | 8.10 | 0.00 | 617.96 | 12.36 | 19.45 | 19.45 | 28.01 | 16.08 | 16.09 | 56.46 | 1.19 | 64.37 | |
| 1 | 1231.8 | 0.0 | 52.93 | 34.87 | 65.20 | 8.47 | 0.00 | 624.37 | 12.74 | 19.45 | 38.90 | 26.84 | 17.15 | 17.15 | 56.73 | 1.23 | 63.24 | |
| 2 | 1231.8 | 0.0 | 53.02 | 35.02 | 65.85 | 8.85 | 0.00 | 630.59 | 13.14 | 19.45 | 58.35 | 25.67 | 18.19 | 18.19 | 57.00 | 1.26 | 62.13 | |
| 3 | 1231.8 | 0.0 | 53.37 | 35.37 | 66.52 | 9.25 | 0.00 | 636.59 | 13.54 | 19.45 | 77.80 | 24.51 | 19.22 | 19.22 | 57.27 | 1.30 | 61.04 | |
| 4 | 1231.8 | 0.0 | 54.54 | 35.72 | 67.18 | 9.66 | 0.00 | 642.36 | 13.96 | 19.45 | 97.25 | 23.34 | 20.22 | 20.22 | 57.52 | 1.34 | 59.95 | |
| 5 | 1231.8 | 0.0 | 55.08 | 36.08 | 67.85 | 10.10 | 0.00 | 647.88 | 14.40 | 19.45 | 116.70 | 22.17 | 21.18 | 4.24 | 16.94 | 57.75 | 1.39 | 58.88 |
| 6 | 1231.8 | 0.0 | 55.83 | 36.44 | 68.53 | 10.55 | 0.00 | 653.12 | 14.84 | 19.45 | 136.15 | 21.01 | 22.13 | 4.43 | 17.70 | 57.98 | 1.43 | 57.83 |
| 7 | 1231.8 | 0.0 | 56.19 | 36.81 | 69.21 | 11.03 | 0.00 | 658.07 | 15.30 | 19.45 | 155.80 | 19.84 | 23.04 | 4.61 | 18.43 | 58.18 | 1.48 | 56.80 |
| 8 | 1231.8 | 0.0 | 56.75 | 37.18 | 69.90 | 11.52 | 0.00 | 662.70 | 15.78 | 19.45 | 175.60 | 18.67 | 23.93 | 4.79 | 19.14 | 58.38 | 1.53 | 55.77 |
| 9 | 1231.8 | 0.0 | 57.32 | 37.55 | 70.61 | 12.04 | 0.00 | 668.87 | 16.27 | 19.45 | 194.50 | 17.51 | 24.79 | 4.98 | 19.83 | 58.57 | 1.58 | 54.78 |
| 10 | 1231.8 | 0.0 | 57.89 | 37.92 | 71.31 | 12.56 | 0.00 | 670.87 | 16.77 | 19.45 | 213.95 | 16.34 | 25.61 | 5.12 | 20.48 | 58.72 | 1.64 | 53.80 |
| 11 | 1231.8 | 0.0 | 58.47 | 38.30 | 72.02 | 13.15 | 0.00 | 674.38 | 17.29 | 19.45 | 233.40 | 15.17 | 26.41 | 5.28 | 21.13 | 58.87 | 1.70 | 52.83 |
| 12 | 1231.8 | 0.0 | 59.06 | 38.68 | 72.75 | 13.74 | 0.00 | 677.46 | 17.83 | 19.45 | 252.85 | 14.00 | 27.18 | 5.44 | 21.74 | 59.01 | 1.76 | 51.89 |
| 13 | 1231.8 | 0.0 | 59.65 | 39.07 | 73.48 | 14.36 | 0.00 | 680.08 | 18.38 | 19.45 | 272.30 | 12.84 | 27.90 | 5.58 | 22.32 | 59.12 | 1.83 | 50.98 |
| 14 | 1231.8 | 0.0 | 60.25 | 39.46 | 74.22 | 15.01 | 0.00 | 682.21 | 18.95 | 19.45 | 291.75 | 11.67 | 28.58 | 5.72 | 22.87 | 59.21 | 1.90 | 50.08 |
| 15 | 1231.8 | 0.0 | 60.85 | 39.86 | 74.96 | 15.68 | 0.00 | 683.82 | 19.54 | 19.45 | 311.20 | 10.50 | 29.24 | 5.85 | 23.39 | 59.28 | 1.98 | 49.20 |
| 16 | 1231.8 | 0.0 | 61.46 | 40.28 | 75.71 | 16.39 | 0.00 | 684.87 | 20.14 | 19.45 | 330.65 | 9.34 | 29.84 | 5.97 | 23.87 | 59.32 | 2.06 | 48.36 |
| 17 | 1231.8 | 0.0 | 62.07 | 40.68 | 76.46 | 17.13 | 0.00 | 685.34 | 20.77 | 19.45 | 350.10 | 8.17 | 30.39 | 6.08 | 24.31 | 59.33 | 2.15 | 47.54 |
| 18 | 1231.8 | 0.0 | 62.69 | 41.08 | 77.22 | 17.90 | 0.00 | 685.17 | 21.41 | 19.45 | 369.55 | 7.00 | 30.91 | 6.18 | 24.73 | 59.32 | 2.24 | 46.74 |
| 19 | 1231.8 | 0.0 | 63.32 | 41.47 | 78.00 | 18.70 | 0.00 | 684.34 | 22.08 | 19.45 | 389.00 | 5.84 | 31.38 | 6.28 | 25.10 | 59.30 | 2.34 | 45.98 |
| 20 | 1231.8 | 0.0 | 63.95 | 41.88 | 78.77 | 19.54 | 0.00 | 682.79 | 22.78 | 19.45 | 408.45 | 4.67 | 31.80 | 6.38 | 25.44 | 59.23 | 2.46 | 45.23 |
| 21 | 1231.8 | 0.0 | 64.59 | 42.31 | 79.56 | 20.42 | 0.00 | 680.49 | 23.47 | 19.45 | 427.90 | 3.50 | 32.17 | 6.43 | 25.74 | 59.14 | 2.56 | 44.52 |
| 22 | 1231.8 | 0.0 | 65.23 | 42.73 | 80.35 | 21.34 | 0.00 | 677.39 | 24.19 | 19.45 | 447.36 | 2.33 | 32.49 | 6.50 | 25.98 | 59.01 | 2.71 | 43.85 |
| 23 | 1231.8 | 0.0 | 65.89 | 43.16 | 81.16 | 22.30 | 0.00 | 673.45 | 24.94 | 19.45 | 466.80 | 1.17 | 32.75 | 6.55 | 26.20 | 58.86 | 2.85 | 43.21 |
| 24 | 1231.8 | 0.0 | 66.54 | 43.59 | 81.96 | 23.31 | 0.00 | 668.61 | 25.72 | 19.45 | 486.25 | 0.00 | 32.93 | 6.59 | 26.34 | 58.65 | 3.02 | 42.61 |
| Sum | | | | | 4161.65 | 1446.58 | 0 | | 1279.06 | 486.25 | | 350.11 | 928.95 | 181.616 | 747.334 | 2715.07 | | |

Note: Net Operation Income = Sales Revenue - O/M Cost - Royalty - Depreciation
 Income before Tax = Net Operation Income + Interest Payment
 Current Asset in Cash = Net Operation Income + Depreciation - Debt Service Ratio = Current Asset in Cash / (Principal Repay. + Interest Payment)
 The year 25 onwards are not printed in the above table intentionally.

Table 18.4-2 Financial Analysis (4/4) Financial Internal Rate of Return

Case: - A (Base)

| Dam Site: | Xe Namnoy (M+D) | | Equity Proportions | | Total construction Cost (M.US\$) | | | | Discount Rate |
|-------------------|-----------------|--|-----------------------|--------|----------------------------------|---------|---------|--------|--------------------|
| | | | | | | | | | 10.0% |
| Install Capacity | 305 MW | | Lao PDR | 100.0% | Finance Items | LAO PDR | PRV SCT | Total | Discounted to Year |
| Generation Energy | 1384 GWh | | Private | 0.0% | Own Finance | 54.02 | 0 | 54.02 | B(enefit) |
| | | | | | Principal Loan | 486.25 | 0 | 486.25 | C(cost) |
| | | | Loyalty from Operator | 0.0% | IDC | 77.69 | 0 | 77.69 | B/C |
| Construction Cost | 433.22 M.US\$ | | Lao PDR | 100.0% | Total | 617.96 | 0 | 617.96 | FIRR for the Year |
| | | | Private | 0.0% | Equity / Royalty Fee | 0 | 0 | - | FIRR |
| | | | | | | | | | 37.26% |

(Unit M.US\$)

| Year | Own Finance | IDC | Principal Repay. | Interest Payment | Royalty | Total Cost | Net Income after Tax | Depreciation + Interest | Total Income | NPV Convert Index | Net Present Value | | NPV Cumulative | | Balance B - C before Discount |
|------|-------------|-------|------------------|------------------|---------|------------|----------------------|-------------------------|--------------|-------------------|-------------------|---------|----------------|-------------|-------------------------------|
| | | | | | | | | | | | Cost | Benefit | Cost (C) | Benefit (B) | |
| -10 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.5937 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -9 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.3579 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -8 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.1436 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -7 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 1.9487 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -6 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 1.7718 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -5 | 4.77 | 2.58 | | | 0.00 | 4.77 | | | 0.00 | 1.6105 | 7.68 | 0.00 | 7.68 | 0.00 | -4.77 |
| -4 | 8.12 | 6.96 | | | 0.00 | 8.12 | | | 0.00 | 1.4641 | 11.89 | 0.00 | 19.57 | 0.00 | -8.12 |
| -3 | 14.80 | 14.96 | | | 0.00 | 14.80 | | | 0.00 | 1.3310 | 19.70 | 0.00 | 39.27 | 0.00 | -14.80 |
| -2 | 16.76 | 24.01 | | | 0.00 | 16.76 | | | 0.00 | 1.2100 | 20.28 | 0.00 | 59.55 | 0.00 | -16.76 |
| -1 | 9.57 | 29.18 | | | 0.00 | 9.57 | | | 0.00 | 1.1000 | 10.53 | 0.00 | 70.08 | 0.00 | -9.57 |
| 0 | | | 19.45 | 28.01 | | 19.45 | 16.09 | 40.37 | 56.46 | 1.0000 | 19.45 | 56.46 | 89.53 | 56.46 | 37.01 |
| 1 | | | 19.45 | 26.84 | | 19.45 | 17.15 | 39.58 | 56.73 | 0.9091 | 17.68 | 51.57 | 107.21 | 108.03 | 37.28 |
| 2 | | | 19.45 | 25.67 | | 19.45 | 18.19 | 38.81 | 57.00 | 0.8264 | 18.07 | 47.10 | 123.28 | 155.13 | 37.55 |
| 3 | | | 19.45 | 24.51 | | 19.45 | 19.22 | 38.05 | 57.27 | 0.7513 | 14.61 | 43.03 | 137.89 | 198.16 | 37.82 |
| 4 | | | 19.45 | 23.34 | | 19.45 | 20.22 | 37.30 | 57.52 | 0.6830 | 13.28 | 39.29 | 151.17 | 237.45 | 38.07 |
| 5 | | | 19.45 | 22.17 | | 19.45 | 16.94 | 36.57 | 53.51 | 0.6209 | 12.08 | 33.22 | 163.25 | 270.67 | 34.06 |
| 6 | | | 19.45 | 21.01 | | 19.45 | 17.70 | 35.85 | 53.56 | 0.5645 | 10.96 | 30.23 | 174.23 | 300.90 | 34.10 |
| 7 | | | 19.45 | 19.84 | | 19.45 | 18.43 | 35.14 | 53.57 | 0.5132 | 9.96 | 27.49 | 184.21 | 326.39 | 34.12 |
| 8 | | | 19.45 | 18.67 | | 19.45 | 19.14 | 34.45 | 53.59 | 0.4665 | 9.07 | 25.00 | 193.28 | 353.39 | 34.14 |
| 9 | | | 19.45 | 17.51 | | 19.45 | 19.83 | 33.78 | 53.61 | 0.4241 | 8.25 | 22.74 | 201.53 | 376.13 | 34.16 |
| 10 | | | 19.45 | 16.34 | | 19.45 | 20.49 | 33.11 | 53.60 | 0.3855 | 7.50 | 20.66 | 209.03 | 396.79 | 34.15 |
| 11 | | | 19.45 | 15.17 | | 19.45 | 21.13 | 32.46 | 53.59 | 0.3505 | 6.82 | 18.78 | 215.85 | 415.57 | 34.14 |
| 12 | | | 19.45 | 14.00 | | 19.45 | 21.74 | 31.83 | 53.57 | 0.3186 | 6.20 | 17.07 | 222.05 | 432.64 | 34.12 |
| 13 | | | 19.45 | 12.84 | | 19.45 | 22.32 | 31.22 | 53.54 | 0.2897 | 5.63 | 15.51 | 227.68 | 448.15 | 34.09 |
| 14 | | | 19.45 | 11.67 | | 19.45 | 22.87 | 30.62 | 53.49 | 0.2633 | 5.12 | 14.08 | 232.80 | 462.23 | 34.04 |
| 15 | | | 19.45 | 10.50 | | 19.45 | 23.39 | 30.04 | 53.43 | 0.2394 | 4.66 | 12.79 | 237.46 | 475.02 | 33.98 |
| 16 | | | 19.45 | 9.34 | | 19.45 | 23.87 | 29.48 | 53.35 | 0.2176 | 4.23 | 11.61 | 241.69 | 486.63 | 33.90 |
| 17 | | | 19.45 | 8.17 | | 19.45 | 24.31 | 28.94 | 53.25 | 0.1978 | 3.85 | 10.53 | 245.54 | 497.16 | 33.80 |
| 18 | | | 19.45 | 7.00 | | 19.45 | 24.73 | 28.41 | 53.14 | 0.1799 | 3.50 | 9.56 | 249.04 | 506.72 | 33.69 |
| 19 | | | 19.45 | 5.84 | | 19.45 | 25.10 | 27.92 | 53.02 | 0.1635 | 3.18 | 8.67 | 252.22 | 515.39 | 33.57 |
| 20 | | | 19.45 | 4.67 | | 19.45 | 25.44 | 27.43 | 52.87 | 0.1486 | 2.89 | 7.86 | 255.11 | 523.25 | 33.42 |
| 21 | | | 19.45 | 3.50 | | 19.45 | 25.74 | 26.97 | 52.71 | 0.1351 | 2.63 | 7.12 | 257.74 | 530.37 | 33.26 |
| 22 | | | 19.45 | 2.33 | | 19.45 | 25.99 | 26.52 | 52.51 | 0.1228 | 2.39 | 6.45 | 260.13 | 536.82 | 33.06 |
| 23 | | | 19.45 | 1.17 | | 19.45 | 26.20 | 26.11 | 52.31 | 0.1117 | 2.17 | 5.84 | 262.30 | 542.66 | 32.86 |
| 24 | | | 19.45 | 0.00 | | 19.45 | 26.34 | 25.72 | 52.06 | 0.1015 | 1.97 | 5.28 | 264.27 | 547.94 | 32.61 |
| 25 | | | | | | 0.00 | 26.54 | 26.51 | 52.05 | 0.0923 | 0.00 | 4.80 | 264.27 | 552.74 | 52.05 |
| 26 | | | | | | 0.00 | 24.87 | 27.34 | 52.01 | 0.0839 | 0.00 | 4.36 | 264.27 | 557.10 | 52.01 |
| 27 | | | | | | 0.00 | 23.74 | 28.18 | 51.92 | 0.0763 | 0.00 | 3.96 | 264.27 | 561.06 | 51.92 |
| 28 | | | | | | 0.00 | 22.76 | 29.06 | 51.82 | 0.0693 | 0.00 | 3.59 | 264.27 | 564.65 | 51.82 |
| 29 | | | | | | 0.00 | 21.72 | 29.96 | 51.68 | 0.0630 | 0.00 | 3.26 | 264.27 | 567.91 | 51.68 |
| 30 | | | | | | 0.00 | 20.62 | 30.89 | 51.51 | 0.0573 | 0.00 | 2.95 | 264.27 | 570.86 | 51.51 |
| 31 | | | | | | 0.00 | 19.46 | 31.84 | 51.30 | 0.0521 | 0.00 | 2.67 | 264.27 | 573.53 | 51.30 |
| 32 | | | | | | 0.00 | 18.22 | 32.83 | 51.05 | 0.0474 | 0.00 | 2.42 | 264.27 | 575.95 | 51.05 |
| 33 | | | | | | 0.00 | 16.93 | 33.85 | 50.78 | 0.0431 | 0.00 | 2.19 | 264.27 | 578.14 | 50.78 |
| 34 | | | | | | 0.00 | 15.56 | 34.90 | 50.46 | 0.0391 | 0.00 | 1.97 | 264.27 | 580.11 | 50.46 |
| 35 | | | | | | 0.00 | 14.12 | 35.98 | 50.10 | 0.0356 | 0.00 | 1.78 | 264.27 | 581.89 | 50.10 |
| 36 | | | | | | 0.00 | 12.60 | 37.09 | 49.69 | 0.0323 | 0.00 | 1.60 | 264.27 | 583.49 | 49.69 |
| 37 | | | | | | 0.00 | 11.00 | 38.24 | 49.24 | 0.0294 | 0.00 | 1.45 | 264.27 | 584.94 | 49.24 |
| 38 | | | | | | 0.00 | 9.30 | 39.43 | 48.73 | 0.0267 | 0.00 | 1.30 | 264.27 | 586.24 | 48.73 |
| 39 | | | | | | 0.00 | 7.53 | 40.65 | 48.18 | 0.0243 | 0.00 | 1.17 | 264.27 | 587.41 | 48.18 |
| 40 | | | | | | 0.00 | 5.66 | 41.91 | 47.57 | 0.0221 | 0.00 | 1.05 | 264.27 | 588.46 | 47.57 |
| 41 | | | | | | 0.00 | 3.69 | 43.21 | 46.90 | 0.0201 | 0.00 | 0.94 | 264.27 | 589.40 | 46.90 |
| 42 | | | | | | 0.00 | 1.62 | 44.55 | 46.17 | 0.0183 | 0.00 | 0.84 | 264.27 | 590.24 | 46.17 |
| 43 | | | | | | 0.00 | -0.68 | 45.93 | 45.25 | 0.0166 | 0.00 | 0.75 | 264.27 | 590.99 | 45.25 |
| 44 | | | | | | 0.00 | -3.55 | 47.36 | 43.81 | 0.0151 | 0.00 | 0.66 | 264.27 | 591.65 | 43.81 |
| 45 | | | | | | 0.00 | -6.54 | 48.82 | 42.28 | 0.0137 | 0.00 | 0.58 | 264.27 | 592.23 | 42.28 |
| 46 | | | | | | 0.00 | -9.69 | 50.34 | 40.65 | 0.0125 | 0.00 | 0.51 | 264.27 | 592.74 | 40.65 |
| 47 | | | | | | 0.00 | -13.00 | 51.90 | 38.90 | 0.0113 | 0.00 | 0.44 | 264.27 | 593.18 | 38.90 |
| 48 | | | | | | 0.00 | -16.45 | 53.51 | 37.06 | 0.0103 | 0.00 | 0.38 | 264.27 | 593.56 | 37.06 |
| 49 | | | | | | 0.00 | -20.09 | 55.16 | 35.07 | 0.0094 | 0.00 | 0.33 | 264.27 | 593.89 | 35.07 |
| Sum | 54.02 | 77.69 | 486.25 | 350.11 | 0.00 | 540.27 | 747.31 | 1786.12 | 2533.43 | | | 264.27 | 593.89 | | 1993.16 |

Note: Financial Generation Cost (FGC) is calculated as below.

$$FGC = \frac{NPV(\text{Own Finance} + IDC + \text{Royalty} + O/M \text{ Cost} + \text{Prct Repayment} + \text{Interest Payment})}{NPV(\text{Generation Energy})}$$

Total cost does not include IDC and Interest Payment for the purpose of FIRR calculation.

Financial Generation Cost in Year 0 at 10.0% discount rate

48.51 \$/MWh

Table 18.4-3 Financial Analysis (1/4) Summary of Financial Analysis

| | | | |
|---|----------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (M+D) | |
| Case: - B (Base) | | | |
| Construction Cost | 1,420.39 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 25.0% | 75.0% | |
| Debt / Equity | Debt | Equity | |
| | 70.0% | 30.0% | |
| Installed Capacity | 305.0 MW | | |
| Generation Energy | 1,384.0 GWh | | |
| Sending-end Energy | 1,231.8 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 433.22 M.US\$ | | |
| After Price Escalation | 540.27 M.US\$ | | |
| Financial Budget | 640.98 M.US\$ | | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 40.52 | 121.56 |
| | Loan Amount | 94.55 | 283.84 |
| | IDC | 25.19 | 75.52 |
| | Royalty | - | 0.00 |
| | Total | 160.26 | 480.72 |
| Export/Domestic Ratio for Salable Energy | | | |
| | Export | 100.0% | |
| | Domestic | 0.0% | |
| Initial Power Tariff at year 0 | | | |
| | Export | 52.41 US\$/MWh | |
| | Domestic | 34.33 US\$/MWh | |
| Power Tariff Escalation | | | |
| | Export | 1.00% | |
| | Domestic | 1.00% | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 10.00% | | |
| Financial Indices | | | |
| Averaged Debt Service Coverage | | 0.93 | |
| Financial Internal Rate of Return | | -6.58% | |
| FIRR Calculation Period | | 10 years | |
| BOT Period | | | |
| BOT Period | | 25 Years | |
| FIRR for the BOT Period | | 10.33% | |
| General Inflation | | | |
| | Foreign | 2.80% | |
| | Domestic | 4.50% | |
| Financial Conditions | | | |
| | Interest Rate for IDC | 10.00% | |
| | Interest after Operation | 10.00% | |
| | Repayment Period | 10 yr | |
| | Graced Period | 5 yr | |
| | Government Own finance | 0.00% | |
| Income Statement | | M.US\$ | |
| | Sales Revenue | 4,161.65 | |
| | Operating Expense | 3,352.31 | |
| | Financial Expense | 170.19 | |
| | Net Income before Tax | 639.15 | |
| | Income Tax | (152.83) | |
| | Net Income | 486.32 | |
| To the Government | | M.US\$ | |
| | Royalty | 416.23 | |
| | Income Tax | 152.828 | |
| | Interest Payment to Equity | - | |
| | Net Income | 569.058 | |
| Financial Generation Cost in | | 63.06 | |
| Year 0 for the project life time | | | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-3 Financial Analysis (2/4) Construction Disbursement and Loan Amount

Case: - B (Base)

| Dam Site: | Xe Namnoy (M+D) | | Equity Proportions | | Price Escalation per annum | | Finance Condition | | Total Construction Cost (M.US\$) | | | |
|-------------------|-----------------|-----------|--------------------|---------|----------------------------|--------|-------------------|----------|----------------------------------|---------|---------|--------|
| | Installed | 305.00 MW | Lao PDR | Private | F/C Portion | 2.8% | IDC | 10.00 % | Finance Items | Lao PDR | PRV SCT | Total |
| Generation Energy | 1,384.0 GWh | | | | L/C Portion | 4.5% | Interest Rate | 10.00 % | Own Finance | 40.52 | 121.56 | 162.08 |
| Salable Energy | 1,231.8 GWh | | | | | | Repayment Period | 10 years | Principal Loan | 94.55 | 283.64 | 378.19 |
| Project Cost | 1420.39 \$/Kw | | | | | | Graced Period | 5 years | IDC | 25.19 | 75.52 | 100.71 |
| F/C | 367.09 M.US\$ | | | | Exporting Ratio | 100.0% | Lao Own Finance | 0.00 % | Total | 160.26 | 480.72 | 640.98 |
| L/C | 66.13 M.US\$ | | | | Exp. Price (\$/MWh) | 52.410 | | | Equity / Royalty Fee | 40.52 | 0.00 | - |
| Total | 433.22 M.US\$ | | | | Dom. Price (\$/MWh) | 34.390 | | | | | | |

| Year | Disbursement before Escalation | | Price Index | | Disbursement after Escalation | | Total Disburse | | Finance Proportion | | | Own Finance Portion | | | Loan Portion | | | Loan Cumulative | | | Royalty Fee | | | |
|------|--------------------------------|---------|-------------|---------|-------------------------------|---------|----------------|--------|--------------------|---------|--------|---------------------|---------|--------|--------------|---------|--------|-----------------|---------|--------|-------------|--------|------|--|
| | for F/C | for L/C | for F/C | for L/C | for F/C | for L/C | M.US\$ | M.US\$ | Lao PDR | PRV SCT | M.US\$ | Lao PDR | PRV SCT | M.US\$ | Lao PDR | PRV SCT | M.US\$ | Lao PDR | PRV SCT | M.US\$ | M.US\$ | M.US\$ | | |
| | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | | |
| -10 | 0.00 | 0.00 | 1.0000 | 1.0000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -9 | 0.00 | 0.00 | 1.0280 | 1.0450 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -8 | 0.00 | 0.00 | 1.0568 | 1.0920 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -7 | 0.00 | 0.00 | 1.0864 | 1.1412 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -6 | 0.00 | 0.00 | 1.1168 | 1.1925 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -5 | 31.39 | 9.38 | 1.1481 | 1.2462 | 36.04 | 11.69 | 47.73 | 11.93 | 35.80 | 0.00 | 3.58 | 10.74 | 8.35 | 25.06 | 8.35 | 25.06 | 0.84 | 2.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -4 | 56.09 | 11.54 | 1.1802 | 1.3023 | 66.20 | 15.03 | 81.23 | 20.31 | 60.92 | 0.00 | 6.09 | 18.28 | 14.22 | 42.64 | 22.57 | 67.70 | 2.26 | 6.77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -3 | 102.53 | 17.37 | 1.2133 | 1.3609 | 124.40 | 23.64 | 148.04 | 37.01 | 111.03 | 0.00 | 11.10 | 33.31 | 25.91 | 77.72 | 48.48 | 145.42 | 4.85 | 14.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -2 | 113.58 | 18.23 | 1.2472 | 1.4221 | 141.66 | 25.92 | 167.58 | 41.90 | 125.68 | 0.00 | 12.57 | 37.70 | 29.33 | 87.98 | 77.81 | 233.40 | 7.78 | 23.34 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| -1 | 63.50 | 9.61 | 1.2821 | 1.4861 | 81.41 | 14.28 | 95.69 | 23.92 | 71.77 | 0.00 | 7.18 | 21.53 | 16.74 | 50.24 | 94.55 | 283.64 | 9.46 | 28.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 0 | 0.00 | 0.00 | 1.3180 | 1.5530 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Sum | 367.09 | 66.13 | | | 449.71 | 90.56 | 540.27 | 135.07 | 405.20 | 0.00 | 40.52 | 121.56 | 94.55 | 283.64 | 25.19 | 75.52 | | | | | | | | |

Table 18.4-3 Financial Analysis (3/4) Income Statement

| Year | Selling Revenue | | Sales Revenue M.U.S\$ | O/M Cost M.U.S\$ | Royalty M.U.S\$ | Y.Start Fixed Asset M.U.S\$ | Depreciation M.U.S\$ | Y.End Fixed Asset M.U.S\$ | Net Operation Income M.U.S\$ | Principi p.Repay- ment M.U.S\$ | Cum. of p.Repay- ment M.U.S\$ | Interest Payment M.U.S\$ | Income before Tax M.U.S\$ | Income Tax M.U.S\$ | Net Income after Tax M.U.S\$ | Current Asset in Cash M.U.S\$ | Debt Service Ratio | Export Price DSC=1.5 \$/MMWh | |
|------|-----------------|-----------------|--------------------------|---------------------|--------------------|-----------------------------------|-------------------------|---------------------------------|------------------------------------|---|--|--------------------------------|------------------------------------|--------------------------|---------------------------------------|--|----------------------------------|---------------------------------------|------|
| | Export GWh | Domestic GWh | | | | | | | | | | | | | | | | | |
| 0 | 1231.8 | 0.0 | 54.56 | 8.10 | 6.46 | 640.96 | 12.82 | 628.16 | 37.18 | 37.82 | 37.82 | 34.04 | 3.14 | 3.14 | 50.00 | 0.70 | 96.33 | | |
| 1 | 1231.8 | 0.0 | 65.20 | 8.47 | 8.52 | 647.83 | 13.22 | 634.61 | 38.96 | 37.82 | 75.64 | 30.26 | 6.73 | 6.73 | 50.21 | 0.74 | 95.07 | | |
| 2 | 1231.8 | 0.0 | 65.65 | 8.85 | 8.59 | 654.08 | 13.63 | 640.45 | 38.76 | 37.82 | 113.46 | 28.47 | 10.31 | 10.31 | 50.41 | 0.78 | 90.82 | | |
| 3 | 1231.8 | 0.0 | 66.52 | 9.25 | 8.65 | 660.30 | 14.05 | 646.25 | 38.57 | 37.82 | 151.28 | 22.69 | 13.88 | 13.88 | 50.82 | 0.84 | 86.56 | | |
| 4 | 1231.8 | 0.0 | 67.18 | 9.66 | 8.72 | 666.28 | 14.48 | 651.80 | 38.32 | 37.82 | 189.10 | 16.91 | 17.41 | 17.41 | 50.80 | 0.90 | 82.38 | | |
| 5 | 1231.8 | 0.0 | 67.85 | 10.10 | 8.79 | 672.01 | 14.93 | 657.08 | 38.03 | 37.82 | 226.92 | 15.13 | 20.90 | 4.18 | 16.72 | 50.96 | 0.96 | 78.19 | |
| 6 | 1231.8 | 0.0 | 68.53 | 10.55 | 8.85 | 677.45 | 15.40 | 662.05 | 35.73 | 37.82 | 264.74 | 11.35 | 24.38 | 4.88 | 19.50 | 51.13 | 1.04 | 74.00 | |
| 7 | 1231.8 | 0.0 | 69.21 | 11.03 | 8.92 | 682.57 | 15.87 | 666.70 | 35.36 | 37.82 | 302.56 | 7.56 | 27.83 | 5.57 | 22.26 | 51.26 | 1.13 | 68.83 | |
| 8 | 1231.8 | 0.0 | 69.90 | 11.52 | 8.99 | 687.37 | 16.37 | 671.00 | 35.02 | 37.82 | 340.38 | 3.78 | 31.24 | 6.25 | 24.98 | 51.38 | 1.24 | 65.68 | |
| 9 | 1231.8 | 0.0 | 70.61 | 12.04 | 9.06 | 691.80 | 16.87 | 674.93 | 34.64 | 37.82 | 378.20 | 0.00 | 34.64 | 6.93 | 27.71 | 51.51 | 1.36 | 61.58 | |
| 10 | 1231.8 | 0.0 | 71.31 | 12.59 | 9.13 | 695.85 | 17.40 | 678.45 | 34.19 | 0.00 | 378.20 | 0.00 | 34.19 | 6.84 | 27.35 | 51.59 | 0.00 | 0.00 | |
| 11 | 1231.8 | 0.0 | 72.02 | 13.15 | 9.20 | 699.48 | 17.94 | 681.54 | 33.73 | 0.00 | 378.20 | 0.00 | 33.73 | 6.75 | 26.98 | 51.87 | 0.00 | 0.00 | |
| 12 | 1231.8 | 0.0 | 72.75 | 13.74 | 9.28 | 702.67 | 18.49 | 684.18 | 33.24 | 0.00 | 378.20 | 0.00 | 33.24 | 6.65 | 26.59 | 51.73 | 0.00 | 0.00 | |
| 13 | 1231.8 | 0.0 | 73.48 | 14.36 | 9.35 | 705.39 | 19.06 | 686.33 | 32.71 | 0.00 | 378.20 | 0.00 | 32.71 | 6.54 | 26.17 | 51.77 | 0.00 | 0.00 | |
| 14 | 1231.8 | 0.0 | 74.22 | 15.01 | 9.42 | 707.81 | 19.66 | 687.95 | 32.13 | 0.00 | 378.20 | 0.00 | 32.13 | 6.43 | 25.70 | 51.79 | 0.00 | 0.00 | |
| 15 | 1231.8 | 0.0 | 74.96 | 15.68 | 9.50 | 709.28 | 20.27 | 689.01 | 31.51 | 0.00 | 378.20 | 0.00 | 31.51 | 6.30 | 25.21 | 51.78 | 0.00 | 0.00 | |
| 16 | 1231.8 | 0.0 | 75.71 | 16.39 | 9.57 | 710.37 | 20.89 | 689.48 | 30.86 | 0.00 | 378.20 | 0.00 | 30.86 | 6.17 | 24.69 | 51.75 | 0.00 | 0.00 | |
| 17 | 1231.8 | 0.0 | 76.46 | 17.13 | 9.65 | 710.85 | 21.54 | 689.31 | 30.14 | 0.00 | 378.20 | 0.00 | 30.14 | 6.03 | 24.11 | 51.68 | 0.00 | 0.00 | |
| 18 | 1231.8 | 0.0 | 77.22 | 17.90 | 9.72 | 710.68 | 22.21 | 688.47 | 29.39 | 0.00 | 378.20 | 0.00 | 29.39 | 5.88 | 23.51 | 51.60 | 0.00 | 0.00 | |
| 19 | 1231.8 | 0.0 | 78.00 | 18.70 | 9.80 | 709.81 | 22.90 | 686.91 | 28.60 | 0.00 | 378.20 | 0.00 | 28.60 | 5.72 | 22.88 | 51.50 | 0.00 | 0.00 | |
| 20 | 1231.8 | 0.0 | 78.77 | 18.54 | 9.88 | 708.20 | 23.61 | 684.59 | 27.74 | 0.00 | 378.20 | 0.00 | 27.74 | 5.55 | 22.19 | 51.35 | 0.00 | 0.00 | |
| 21 | 1231.8 | 0.0 | 79.56 | 20.42 | 9.96 | 705.81 | 24.34 | 681.47 | 26.84 | 0.00 | 378.20 | 0.00 | 26.84 | 5.37 | 21.47 | 51.18 | 0.00 | 0.00 | |
| 22 | 1231.8 | 0.0 | 80.35 | 21.34 | 10.04 | 702.80 | 25.09 | 677.51 | 25.88 | 0.00 | 378.20 | 0.00 | 25.88 | 5.18 | 20.70 | 50.87 | 0.00 | 0.00 | |
| 23 | 1231.8 | 0.0 | 81.16 | 22.30 | 10.12 | 698.51 | 25.87 | 672.64 | 24.87 | 0.00 | 378.20 | 0.00 | 24.87 | 4.97 | 19.90 | 50.74 | 0.00 | 0.00 | |
| 24 | 1231.8 | 0.0 | 81.96 | 23.31 | 10.20 | 693.49 | 26.67 | 666.82 | 23.76 | 0.00 | 378.20 | 0.00 | 23.76 | 4.78 | 19.02 | 50.45 | 0.00 | 0.00 | |
| Sum | | | 4161.65 | 1446.58 | 416.23 | | 1489.5 | | 809.34 | 378.20 | | 170.19 | 639.15 | 152.828 | 466.322 | 2268.64 | | | |
| | | | | | | | | | | | | | | | | | Average DSC for Repayment Period | | 0.83 |

Note: Net Operation Income = Sales Revenue - O/M Cost - Royalty - Depreciation
 Income before Tax = Net Operation Income + Depreciation, Debt Service Ratio = Current Asset in Cash / (Principal Repay. + Interest Payment)
 Current Asset in Cash = Net Operation Income + Depreciation
 The year 25 onwards are not printed in the above table intentionally.

Table 18.4-3 Financial Analysis (4/4) Financial Internal Rate of Return

Case: - B (Base)

| Dam Site: | Xe Namnoy (M+D) | Equity Proportions | | Total construction Cost (M.US\$) | | | | Discount Rate | |
|-------------------|-----------------|-----------------------|-------|----------------------------------|---------|---------|--------|--------------------|--------|
| | | | | | | | Total | Discounted to Year | |
| Install Capacity | 305 MW | Lao PDR | 25.0% | Finance Items | LAO PDR | PRV SCT | | | 0 |
| Generation Energy | 1384 GWh | Private | 75.0% | Own Finance | 40.52 | 121.56 | 162.08 | B(enefit) | 514.27 |
| | | Royalty from Operator | 10.0% | Principal Loan | 94.55 | 283.64 | 378.19 | C(cost) | 465.87 |
| | | Lao PDR | 25.0% | IDC | 25.19 | 75.52 | 100.71 | B/C | 1.10 |
| Construction Cost | 433.22 M.US\$ | Private | 75.0% | Total | 160.26 | 480.72 | 640.98 | FIRR for the Year | 9 |
| | | | | Equity / Royalty Fee | 40.52 | 0 | - | FIRR | -6.58% |

| Year | Own Finance | IDC | Principal Repay. | Interest Payment | Royalty | Total Cost | Net Income after Tax | Depreciation + Interest | Total Income | NPV Convert Index | Net Present Value | | NPV Cumulative | | Balance B - C before Discount |
|------|-------------|--------|------------------|------------------|---------|------------|----------------------|-------------------------|--------------|-------------------|-------------------|---------|----------------|-------------|-------------------------------|
| | | | | | | | | | | | Cost | Benefit | Cost (C) | Benefit (B) | |
| -10 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.5937 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -9 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.3579 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -8 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.1436 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -7 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 1.9487 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -6 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 1.7718 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -5 | 14.32 | 3.35 | | | 0.00 | 14.32 | | | 0.00 | 1.6105 | 23.06 | 0.00 | 23.06 | 0.00 | -14.32 |
| -4 | 24.37 | 9.03 | | | 0.00 | 24.37 | | | 0.00 | 1.4641 | 35.68 | 0.00 | 58.74 | 0.00 | -24.37 |
| -3 | 44.41 | 19.39 | | | 0.00 | 44.41 | | | 0.00 | 1.3310 | 59.11 | 0.00 | 117.85 | 0.00 | -44.41 |
| -2 | 50.27 | 31.12 | | | 0.00 | 50.27 | | | 0.00 | 1.2100 | 80.83 | 0.00 | 178.68 | 0.00 | -50.27 |
| -1 | 28.71 | 37.82 | | | 0.00 | 28.71 | | | 0.00 | 1.1000 | 31.58 | 0.00 | 210.26 | 0.00 | -28.71 |
| 0 | | | 37.82 | 34.04 | | 37.82 | 3.14 | 46.86 | 50.00 | 1.0000 | 37.82 | 50.00 | 248.08 | 50.00 | 12.18 |
| 1 | | | 37.82 | 30.26 | | 37.82 | 6.73 | 43.48 | 50.21 | 0.9091 | 34.38 | 45.65 | 262.46 | 95.65 | 12.39 |
| 2 | | | 37.82 | 26.47 | | 37.82 | 10.31 | 40.10 | 50.41 | 0.8264 | 31.25 | 41.66 | 313.71 | 137.31 | 12.59 |
| 3 | | | 37.82 | 22.69 | | 37.82 | 13.88 | 36.74 | 50.62 | 0.7513 | 28.41 | 38.03 | 342.12 | 175.34 | 12.80 |
| 4 | | | 37.82 | 18.91 | | 37.82 | 17.41 | 33.39 | 50.80 | 0.6830 | 25.83 | 34.70 | 367.95 | 210.04 | 12.98 |
| 5 | | | 37.82 | 15.13 | | 37.82 | 16.72 | 30.06 | 46.78 | 0.6209 | 23.48 | 29.05 | 391.43 | 239.09 | 8.96 |
| 6 | | | 37.82 | 11.35 | | 37.82 | 19.50 | 26.75 | 46.25 | 0.5645 | 21.35 | 26.11 | 412.78 | 265.20 | 8.43 |
| 7 | | | 37.82 | 7.56 | | 37.82 | 22.26 | 23.43 | 45.69 | 0.5132 | 19.41 | 23.45 | 432.19 | 288.65 | 7.87 |
| 8 | | | 37.82 | 3.78 | | 37.82 | 24.99 | 20.15 | 45.14 | 0.4655 | 17.64 | 21.06 | 449.83 | 309.71 | 7.32 |
| 9 | | | 37.82 | 0.00 | | 37.82 | 27.71 | 16.87 | 44.58 | 0.4241 | 16.04 | 18.91 | 465.87 | 328.62 | 6.76 |
| 10 | | | 0.00 | 0.00 | | 0.00 | 27.35 | 17.40 | 44.75 | 0.3855 | 0.00 | 17.25 | 465.87 | 345.87 | 44.75 |
| 11 | | | 0.00 | 0.00 | | 0.00 | 26.98 | 17.94 | 44.92 | 0.3505 | 0.00 | 15.74 | 465.87 | 361.61 | 44.92 |
| 12 | | | 0.00 | 0.00 | | 0.00 | 26.59 | 18.49 | 45.08 | 0.3186 | 0.00 | 14.36 | 465.87 | 375.97 | 45.08 |
| 13 | | | 0.00 | 0.00 | | 0.00 | 26.17 | 19.06 | 45.23 | 0.2897 | 0.00 | 13.10 | 465.87 | 388.07 | 45.23 |
| 14 | | | 0.00 | 0.00 | | 0.00 | 25.70 | 19.66 | 45.36 | 0.2633 | 0.00 | 11.94 | 465.87 | 401.01 | 45.36 |
| 15 | | | 0.00 | 0.00 | | 0.00 | 25.21 | 20.27 | 45.48 | 0.2394 | 0.00 | 10.89 | 465.87 | 411.90 | 45.48 |
| 16 | | | 0.00 | 0.00 | | 0.00 | 24.69 | 20.89 | 45.58 | 0.2176 | 0.00 | 9.92 | 465.87 | 421.82 | 45.58 |
| 17 | | | 0.00 | 0.00 | | 0.00 | 24.11 | 21.54 | 45.65 | 0.1978 | 0.00 | 9.03 | 465.87 | 430.85 | 45.65 |
| 18 | | | 0.00 | 0.00 | | 0.00 | 23.51 | 22.21 | 45.72 | 0.1799 | 0.00 | 8.23 | 465.87 | 439.08 | 45.72 |
| 19 | | | 0.00 | 0.00 | | 0.00 | 22.88 | 22.90 | 45.78 | 0.1635 | 0.00 | 7.49 | 465.87 | 446.57 | 45.78 |
| 20 | | | 0.00 | 0.00 | | 0.00 | 22.19 | 23.61 | 45.80 | 0.1486 | 0.00 | 6.81 | 465.87 | 453.38 | 45.80 |
| 21 | | | 0.00 | 0.00 | | 0.00 | 21.47 | 24.34 | 45.81 | 0.1351 | 0.00 | 6.19 | 465.87 | 459.57 | 45.81 |
| 22 | | | 0.00 | 0.00 | | 0.00 | 20.70 | 25.09 | 45.79 | 0.1228 | 0.00 | 5.62 | 465.87 | 465.19 | 45.79 |
| 23 | | | 0.00 | 0.00 | | 0.00 | 19.90 | 25.87 | 45.77 | 0.1117 | 0.00 | 5.11 | 465.87 | 470.30 | 45.77 |
| 24 | | | 0.00 | 0.00 | | 0.00 | 19.02 | 26.67 | 45.69 | 0.1015 | 0.00 | 4.64 | 465.87 | 474.94 | 45.69 |
| 25 | | | 0.00 | 0.00 | | 0.00 | 18.12 | 27.50 | 45.62 | 0.0923 | 0.00 | 4.21 | 465.87 | 479.15 | 45.62 |
| 26 | | | 0.00 | 0.00 | | 0.00 | 17.18 | 28.35 | 45.53 | 0.0839 | 0.00 | 3.82 | 465.87 | 482.97 | 45.53 |
| 27 | | | 0.00 | 0.00 | | 0.00 | 16.14 | 29.23 | 45.37 | 0.0763 | 0.00 | 3.46 | 465.87 | 486.43 | 45.37 |
| 28 | | | 0.00 | 0.00 | | 0.00 | 15.07 | 30.14 | 45.21 | 0.0693 | 0.00 | 3.13 | 465.87 | 489.56 | 45.21 |
| 29 | | | 0.00 | 0.00 | | 0.00 | 13.94 | 31.07 | 45.01 | 0.0630 | 0.00 | 2.84 | 465.87 | 492.40 | 45.01 |
| 30 | | | 0.00 | 0.00 | | 0.00 | 12.74 | 32.04 | 44.78 | 0.0573 | 0.00 | 2.57 | 465.87 | 494.97 | 44.78 |
| 31 | | | 0.00 | 0.00 | | 0.00 | 11.48 | 33.03 | 44.51 | 0.0521 | 0.00 | 2.32 | 465.87 | 497.29 | 44.51 |
| 32 | | | 0.00 | 0.00 | | 0.00 | 10.14 | 34.05 | 44.19 | 0.0474 | 0.00 | 2.09 | 465.87 | 499.38 | 44.19 |
| 33 | | | 0.00 | 0.00 | | 0.00 | 8.74 | 35.11 | 43.85 | 0.0431 | 0.00 | 1.89 | 465.87 | 501.27 | 43.85 |
| 34 | | | 0.00 | 0.00 | | 0.00 | 7.27 | 36.20 | 43.47 | 0.0391 | 0.00 | 1.70 | 465.87 | 502.97 | 43.47 |
| 35 | | | 0.00 | 0.00 | | 0.00 | 5.73 | 37.32 | 43.05 | 0.0356 | 0.00 | 1.53 | 465.87 | 504.50 | 43.05 |
| 36 | | | 0.00 | 0.00 | | 0.00 | 4.10 | 38.47 | 42.57 | 0.0323 | 0.00 | 1.38 | 465.87 | 505.88 | 42.57 |
| 37 | | | 0.00 | 0.00 | | 0.00 | 2.39 | 39.67 | 42.06 | 0.0294 | 0.00 | 1.24 | 465.87 | 507.12 | 42.06 |
| 38 | | | 0.00 | 0.00 | | 0.00 | 0.59 | 40.90 | 41.49 | 0.0267 | 0.00 | 1.11 | 465.87 | 508.23 | 41.49 |
| 39 | | | 0.00 | 0.00 | | 0.00 | -1.63 | 42.17 | 40.84 | 0.0243 | 0.00 | 0.99 | 465.87 | 509.22 | 40.84 |
| 40 | | | 0.00 | 0.00 | | 0.00 | -4.10 | 43.47 | 39.37 | 0.0221 | 0.00 | 0.87 | 465.87 | 510.09 | 39.37 |
| 41 | | | 0.00 | 0.00 | | 0.00 | -6.71 | 44.82 | 38.11 | 0.0201 | 0.00 | 0.77 | 465.87 | 510.88 | 38.11 |
| 42 | | | 0.00 | 0.00 | | 0.00 | -9.44 | 46.21 | 36.77 | 0.0183 | 0.00 | 0.67 | 465.87 | 511.53 | 36.77 |
| 43 | | | 0.00 | 0.00 | | 0.00 | -12.29 | 47.64 | 35.35 | 0.0166 | 0.00 | 0.59 | 465.87 | 512.12 | 35.35 |
| 44 | | | 0.00 | 0.00 | | 0.00 | -15.31 | 49.12 | 33.81 | 0.0151 | 0.00 | 0.51 | 465.87 | 512.63 | 33.81 |
| 45 | | | 0.00 | 0.00 | | 0.00 | -18.46 | 50.64 | 32.18 | 0.0137 | 0.00 | 0.44 | 465.87 | 513.07 | 32.18 |
| 46 | | | 0.00 | 0.00 | | 0.00 | -21.76 | 52.21 | 30.45 | 0.0125 | 0.00 | 0.38 | 465.87 | 513.45 | 30.45 |
| 47 | | | 0.00 | 0.00 | | 0.00 | -25.24 | 53.83 | 28.59 | 0.0113 | 0.00 | 0.32 | 465.87 | 513.77 | 28.59 |
| 48 | | | 0.00 | 0.00 | | 0.00 | -28.86 | 55.51 | 26.65 | 0.0103 | 0.00 | 0.27 | 465.87 | 514.04 | 26.65 |
| 49 | | | 0.00 | 0.00 | | 0.00 | -32.66 | 57.22 | 24.56 | 0.0094 | 0.00 | 0.23 | 465.87 | 514.27 | 24.56 |
| Sum | 162.08 | 100.71 | 378.20 | 170.19 | 0.00 | 540.28 | 486.29 | 1659.69 | 2145.98 | | 465.87 | 514.27 | | | 1805.70 |

Note: Financial Generation Cost (FGC) is calculated as below.

$$FGC = NPV(Own Finance + IDC + Royalty + O/M Cost + Prc Repayment + Interest Payment) / NPV(Generation Energy)$$

Total Cost does not include IDC and Interest Payment for the purpose of FIRR calculation.

Financial Generation Cost in Year 0 at 10.0% discount rate

\$3.06 \$/MWh

Table 18.4-4

Financial Analysis

Summary of Financial Analysis

| | | | |
|---|----------|-------------------------|------------|
| Site Name | | Xe Namnoy (M+D) | |
| Case: - A (Case 1: Allocated T/L system) | | | |
| Construction Cost | | 1,533.28 US\$/kW | |
| Equity Share | Lao PDR | Private S. | |
| | 100.0% | 0.0% | |
| Debt / Equity | Debt | Equity | |
| | 90.0% | 10.0% | |
| Installed Capacity | 305.0 | MW | |
| Generation Energy | 1,384.0 | GWh | |
| Sending-end Energy | 1,231.8 | GWh | |
| Construction Cost | | | |
| Before Price Escalation | 467.65 | M.US\$ | |
| After Price Escalation | 583.01 | M.US\$ | |
| Financial Budget | 666.82 | M..US\$ | |
| Financial Items | | Lao PDR | Private S. |
| Own Finance | 58.30 | 0.00 | |
| Loan Amount | 524.71 | 0.00 | |
| IDC | 83.81 | 0.00 | |
| Royalty | - | 0.00 | |
| Total | 666.82 | 0.00 | |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 | US\$/MWh | |
| Domestic | 34.33 | US\$/MWh | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 0.00% | | |
| Financial Indeces | | | |
| Averaged Debt Service Coverage | | 1.59 | |
| Financial Internal Rate of Return | | 34.12% | |
| FIRR Calculation Period | | 25 years | |
| BOT Period | | -- Years | |
| FIRR for the BOT Period | | - | |
| General Inflation | | | |
| Foreign | 2.80% | | |
| Domestic | 4.50% | | |
| Financial Conditions | | | |
| Interest Rate for IDC | 6.00% | | |
| Interest after Operation | 6.00% | | |
| Repayment Period | 25 yr | | |
| Graced Period | 5 yr | | |
| Government Own finance | 10.00% | | |
| Income Statement | | M.US\$ | |
| Sales Revenue | 4,161.65 | | |
| Operating Expense | 3,110.55 | | |
| Financial Expense | 377.77 | | |
| Net Income before Tax | 673.33 | | |
| Income Tax | (148.33) | | |
| Net Income | 525.00 | | |
| To the Government | | M.US\$ | |
| Royalty | 0 | | |
| Income Tax | 148.33 | | |
| Interest Payment to Equity | | | |
| Net Income | 148.33 | | |
| Financial Generation Cost in | | 50.19 | |
| Year 0 for the project life time | | | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-5 Financial Analysis

Summary of Financial Analysis

| | | | |
|--|------------------------|-------------------------|-------------------|
| Site Name | | Xe Namnoy (M+D) | |
| Case: - A (Case 2: Independent T/L) | | | |
| Construction Cost | | 1,515.08 US\$/kW | |
| Equity Share | Lao PDR | Private S. | |
| | 100.0% | 0.0% | |
| Debt / Equity | Debt | Equity | |
| | 90.0% | 10.0% | |
| Installed Capacity | 305.0 MW | | |
| Generation Energy | 1,384.0 GWh | | |
| Sending-end Energy | 1,231.8 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 462.10 M.US\$ | | |
| After Price Escalation | 576.13 M.US\$ | | |
| Financial Budget | 658.96 M.US\$ | | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 57.61 | 0.00 |
| | Loan Amount | 518.52 | 0.00 |
| | IDC | 82.83 | 0.00 |
| | Royalty | - | 0.00 |
| | Total | 658.96 | 0.00 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 0.00% | | |

| | |
|--|-----------------|
| Financial Indices | |
| Averaged Debt Service Coverage | 1.61 |
| Financial Internal Rate of Return | 34.62% |
| FIRR Calculation Period | 25 years |
| BOT Period | -- Years |
| FIRR for the BOT Period | - |

| | |
|-----------------------------|--------|
| General Inflation | |
| Foreign | 2.80% |
| Domestic | 4.50% |
| Financial Conditions | |
| Interest Rate for IDC | 6.00% |
| Interest after Operation | 6.00% |
| Repayment Period | 25 yr |
| Graced Period | 5 yr |
| Government Own finance | 10.00% |

| | | |
|-------------------------|----------|---------------|
| Income Statement | | M.US\$ |
| Sales Revenue | 4,161.65 | |
| Operating Expense | 3,073.86 | |
| Financial Expense | 373.35 | |
| Net Income before Tax | 714.44 | |
| Income Tax | (153.47) | |
| Net Income | 560.97 | |

| | | |
|----------------------------|---------|---------------|
| To the Government | | M.US\$ |
| Royalty | 0 | |
| Income Tax | 153.468 | |
| Interest Payment to Equity | - | |
| Net Income | 153.468 | |

| | |
|---|---------------|
| Financial Generation Cost in | 49.6 |
| Year 0 for the project life time | |
| 10.0% Discount Rate | \$/MWh |

Table 18.4-6 Financial Analysis

Summary of Financial Analysis

| | | | |
|---|--------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (M+D) | |
| Case: - B (Case 1: Allocated T/L system) | | | |
| Construction Cost | 1,533.28 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 25.0% | 75.0% | |
| Debt / Equity | Debt | Equity | |
| | 70.0% | 30.0% | |
| Installed Capacity | 305.0 MW | | |
| Generation Energy | 1,384.0 GWh | | |
| Sending-end Energy | 1,231.8 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 467.65 | M.US\$ | |
| After Price Escalation | 583.01 | M.US\$ | |
| Financial Budget | 691.65 | M.US\$ | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 43.74 | 131.18 |
| | Loan Amount | 102.03 | 306.06 |
| | IDC | 27.16 | 81.48 |
| | Royalty | - | 0.00 |
| | Total | 172.93 | 518.72 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 | US\$/MWh | |
| Domestic | 34.33 | US\$/MWh | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 10.00% | | |
| Financial Indices | | | |
| Averaged Debt Service Coverage | | 0.85 | |
| Financial Internal Rate of Return | | -13.31% | |
| FIRR Calculation Period | | 10 years | |
| BOT Period | | | |
| BOT Period | | 25 Years | |
| FIRR for the BOT Period | | 8.84% | |
| General Inflation | | | |
| | Foreign | 2.80% | |
| | Domestic | 4.50% | |
| Financial Conditions | | | |
| | Interest Rate for IDC | 10.00% | |
| | Interest after Operation | 10.00% | |
| | Repayment Period | 10 yr | |
| | Graced Period | 5 yr | |
| | Government Own finance | 0.00% | |
| Income Statement | | M.US\$ | |
| Sales Revenue | | 4,161.65 | |
| Operating Expense | | 3,584.55 | |
| Financial Expense | | 183.64 | |
| Net Income before Tax | | 393.46 | |
| Income Tax | | (128.10) | |
| Net Income | | 265.36 | |
| To the Government | | M.US\$ | |
| Royalty | | 416.23 | |
| Income Tax | | 128.1 | |
| Interest Payment to Equity | | - | |
| Net Income | | 544.33 | |
| Financial Generation Cost in | | 67.64 | |
| Year 0 for the project life time | | | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-7 Financial Analysis

Summary of Financial Analysis

| | | | |
|---|-------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (M+D) | |
| Case: - B (Case 2: Independent T/L) | | | |
| Construction Cost | 1,516.08 US\$/KW | | |
| Equity Share | Lao PDR | Private S. | |
| | 25.0% | 75.0% | |
| Debt / Equity | Debt | Equity | |
| | 70.0% | 30.0% | |
| Installed Capacity | 305.0 MW | | |
| Generation Energy | 1,384.0 GWh | | |
| Sending-end Energy | 1,231.8 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 462.10 M.US\$ | | |
| After Price Escalation | 576.13 M.US\$ | | |
| Financial Budget | 683.49 M.US\$ | | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 43.22 | 129.65 |
| | Loan Amount | 100.82 | 302.44 |
| | IDC | 28.85 | 80.51 |
| | Royalty | - | 0.00 |
| | Total | 170.89 | 512.60 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 10.00% | | |
| Financial Indices | | | |
| Averaged Debt Service Coverage | | 0.86 | |
| Financial Internal Rate of Return | | -12.06% | |
| FIRR Calculation Period | | 10 years | |
| BOT Period | | | |
| BOT Period | | 25 Years | |
| FIRR for the BOT Period | | 9.07% | |
| General Inflation | | | |
| Foreign | 2.80% | | |
| Domestic | 4.50% | | |
| Financial Conditions | | | |
| Interest Rate for IDC | 10.00% | | |
| Interest after Operation | 10.00% | | |
| Repayment Period | 10 yr | | |
| Graced Period | 5 yr | | |
| Government Own finance | 0.00% | | |
| Income Statement | | | |
| | | | M.US\$ |
| Sales Revenue | | 4,161.65 | |
| Operating Expense | | 3,547.14 | |
| Financial Expense | | 181.45 | |
| Net Income before Tax | | 433.06 | |
| Income Tax | | (131.80) | |
| Net Income | | 301.26 | |
| To the Government | | | |
| | | | M.US\$ |
| Royalty | | 416.23 | |
| Income Tax | | 131.8 | |
| Interest Payment to Equity | | - | |
| Net Income | | 548.03 | |
| Financial Generation Cost in | | | |
| Year 0 for the project life time | | 66.90 | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-8 Basic Conditions for Xe Namnoy
(Midstream)

| Items | Value and Conditions | Remarks |
|---|---|---|
| Installed Capacity | 238 MW | |
| Firm Capacity | 230 MW | Peak 8 Hours |
| Generation Energy | 1,052 GWh | Annual Average Energy |
| Plant Available Factor | 97.373 % | |
| Sending-end Energy (Salable Energy) | 936.3 GWh | G.Energy x {1- (St.Use + T/D Loss)} |
| Construction Cost including Associated T/L | 281.81 M.US\$ F/C: 237.58 M.US\$ L/C: 44.23 M.US\$ 1,184.0 \$/kW | subject to price escalation F/C: 2.8 % L/C: 4.5 % |
| Construction Period | 5 years * | including Preparatory Works |

* F/C: 9.05, 15.57, 27.13, 31.29, 16.96 (%)

L/C: 16.40, 18.06, 25.10, 26.60, 13.84 (%)

Table 18.4-9 Financial Analysis (1/4) Summary of Financial Analysis

| | | | |
|--|-------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (Mid) | |
| Case: - A (Base) | | | |
| Construction Cost | 1,184.08 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 100.0% | 0.0% | |
| Debt / Equity | Debt | Equity | |
| | 90.0% | 10.0% | |
| Installed Capacity | 238.0 MW | | |
| Generation Energy | 1,052.0 GWh | | |
| Sending-end Energy | 936.3 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 281.81 M.US\$ | | |
| After Price Escalation | 351.31 M.US\$ | | |
| Financial Budget | 402.31 M.US\$ | | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 35.14 | 0.00 |
| | Loan Amount | 316.17 | -0.00 |
| | IDC | 51.00 | 0.00 |
| | Royalty | - | 0.00 |
| | Total | 402.31 | -0.00 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 0.00% | | |

| | |
|--|-----------------|
| Financial Indeces | |
| Averaged Debt Service Coverage | 2.12 |
| Financial Internal Rate of Return | 43.45% |
| FIRR Calculation Period | 25 years |
| BOT Period | -- Years |
| FIRR for the BOT Period | - |

| | |
|-----------------------------|--------|
| General Inflation | |
| Foreign | 2.80% |
| Domestic | 4.50% |
| Financial Conditions | |
| Interest Rate for IDC | 6.00% |
| Interest after Operation | 6.00% |
| Repayment Period | 25 yr |
| Graced Period | 5 yr |
| Government Own finance | 10.00% |

| | | |
|-------------------------|----------|---------------|
| Income Statement | | M.US\$ |
| Sales Revenue | 3,163.32 | |
| Operating Expense | 1,875.43 | |
| Financial Expense | 227.58 | |
| Net Income before Tax | 1,060.31 | |
| Income Tax | (193.33) | |
| Net Income | 866.98 | |

| | | |
|----------------------------|---------|---------------|
| To the Government | | M.US\$ |
| Royalty | 0 | |
| Income Tax | 193.328 | |
| Interest Payment to Equity | - | |
| Net Income | 193.328 | |

| | |
|--|---------------|
| Financial Generation Cost in Year 0 for the project life time | 39.86 |
| 10.0% Discount Rate | \$/MWh |

Table 18.4-9 Financial Analysis (2/4) Construction Disbursement and Loan Amount

| Case: - A (Base) | | Xe Namnoy (Mid) | | Equity Proportions | | Price Escalation per annum | | Finance Condition | | Total Construction Cost (M.US\$) | | | | |
|-------------------|--|-----------------|--|--------------------------|---------|----------------------------|--|---------------------|----------|----------------------------------|----------------------|---------|---------|--------|
| Dam Site: | | 238.00 MW | | Lao PDR | Private | 100.0% | | IDC | 6.00 % | | Finance Items | Lao PDR | PRV.SCT | Total |
| Installed | | 1,052.0 GWh | | Debt/Equity Ratio | | 0.0% | | Interest Rate | 6.00 % | | Own Finance | 35.14 | 0.00 | 35.14 |
| Generation Energy | | 936.3 GWh | | Debt | | 90.0% | | Repayment Period | 25 years | | Principal Loan | 316.17 | -0.00 | 316.17 |
| Salable Energy | | 1184.08 \$/Kw | | Equity | | 10.0% | | Graced Period | 5 years | | IDC | 51.00 | 0.00 | 51.00 |
| Project Cost | | 237.58 M.US\$ | | Royalty for Construction | | 0.0% | | Exporting Ratio | 100.0% | | Total | 402.31 | -0.00 | 402.31 |
| F/C | | 44.23 M.US\$ | | Royalty from Operation | | 0.0% | | Exp. Price (\$/MWh) | 52.410 | | Equity / Royalty Fee | 0.00 | 0.00 | - |
| L/C | | 281.81 M.US\$ | | | | | | Dom. Price (\$/MWh) | 34.330 | | | | | |
| Total | | | | | | | | | | | | | | |

| Year | Disbursement before Escalation | | Price Index | | Disbursement after Escalation | | Total Disburse | | Finance Proportion | | Own Finance Portion | | Loan Portion | | Loan Cumulative | | Royalty Fee | | |
|------|--------------------------------|---------|-------------|---------|-------------------------------|---------|----------------|--------|--------------------|---------|---------------------|---------|--------------|---------|-----------------|---------|-------------|---------|------|
| | for F/C | for L/C | for F/C | for L/C | for F/C | for L/C | M.US\$ | M.US\$ | Lao PDR | PRV.SCT | Lao PDR | PRV.SCT | Lao PDR | PRV.SCT | Lao PDR | PRV.SCT | Lao PDR | PRV.SCT | |
| | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | |
| -10 | 0.00 | 0.00 | 1.0000 | 1.0000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -9 | 0.00 | 0.00 | 1.0280 | 1.0450 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -8 | 0.00 | 0.00 | 1.0568 | 1.0920 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -7 | 0.00 | 0.00 | 1.0864 | 1.1412 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -6 | 0.00 | 0.00 | 1.1168 | 1.1925 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -5 | 21.50 | 7.25 | 1.1481 | 1.2482 | 24.68 | 9.03 | 33.71 | 33.71 | 33.71 | 0.00 | 3.37 | 30.34 | 30.34 | 0.00 | 30.34 | 0.00 | 1.82 | 0.00 | 0.00 |
| -4 | 36.99 | 7.99 | 1.1802 | 1.3023 | 43.66 | 10.41 | 54.07 | 54.07 | 54.07 | 0.00 | 5.41 | 48.66 | 79.00 | -0.00 | 79.00 | 0.00 | 4.74 | 0.00 | 0.00 |
| -3 | 64.46 | 11.10 | 1.2133 | 1.3609 | 78.21 | 15.11 | 93.32 | 93.32 | 93.32 | 0.00 | 9.33 | 83.99 | 162.99 | -0.00 | 162.99 | 0.00 | 9.78 | 0.00 | 0.00 |
| -2 | 74.34 | 11.77 | 1.2472 | 1.4221 | 92.72 | 16.74 | 109.46 | 109.46 | 109.46 | 0.00 | 10.95 | 98.51 | 261.50 | -0.00 | 261.50 | 0.00 | 15.69 | 0.00 | 0.00 |
| -1 | 40.29 | 6.12 | 1.2821 | 1.4861 | 51.66 | 9.09 | 60.75 | 60.75 | 60.75 | 0.00 | 6.08 | 54.67 | 316.17 | -0.00 | 316.17 | 0.00 | 18.97 | 0.00 | 0.00 |
| 0 | 0.00 | 0.00 | 1.3180 | 1.5530 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sum | 237.58 | 44.23 | | | 290.93 | 60.38 | 351.31 | 351.31 | -0.00 | 35.14 | 316.17 | -0.00 | 51.00 | 0.00 | 51.00 | 0.00 | 51.00 | 0.00 | 0.00 |

Table 18.4-9 Financial Analysis (3/4) Income Statement

| Case: - A (Base) | | Xe Namnoy (Mid) | | Exporting Ratio | | 100.0% Exp. Price (\$/MWh) | | 52.41 O/M cost | | 1.5% of T. Diab | | 20.0% Initial F.A. (M.US\$) | | 402.31 | | | | |
|-------------------|-----------------|-------------------|---------------|---------------------|---------|----------------------------|--------------|--------------------|----------------------|---------------------|----------------------|-----------------------------|-------------------|-----------------------|----------------------|-----------------------|--------------------|-----------------------------|
| Dam Site: | | 238 MW | | Domestic Use | | 0.0% | | 34.33 Fuel Cost | | 0.00 \$/MWh | | 0.0% | | 90 | | | | |
| Install Capacity | | 1052.0 GWh | | Increase of D Use | | 2.0% | | 1.00% | | Lao PDR | | 100.0% | | Initial Dep. (M.US\$) | | | | |
| Generation Energy | | 936.3 GWh | | Financial Condition | | Dom. Escalation | | 1.00% | | Private | | 0.0% | | F/C Escalation | | | | |
| Construction Cost | | 281.81 M.US\$ | | Interest Rate (%) | | 6 | | 1.00% | | Dividend | | 2.5% | | L/C Escalation | | | | |
| | | Repayment P. (Yr) | | 25 | | | | | | (not considered) | | Equiv. Escalation | | 3.1% | | | | |
| Year | Selling Revenue | | Sales Revenue | O/M Cost | Royalty | Y. Start Fixed Asset | Depreciation | Y. End Fixed Asset | Net Operation Income | Principal Repayment | Cum. of P. Repayment | Interest Payment | Income before Tax | Income Tax | Net Income after Tax | Current Asset in Cash | Debt Service Ratio | Export Price D90=1.5 \$/MWh |
| | Export GWh | Domestic \$/MWh | | | | | | | | | | | | | | | | |
| 0 | 936.3 | 0.0 | 52.41 | 34.33 | 49.07 | 5.27 | 0.00 | 402.31 | 8.05 | 384.26 | 35.75 | 12.65 | 18.21 | 17.54 | 43.80 | 1.42 | 55.07 | |
| 1 | 936.3 | 0.0 | 52.83 | 34.67 | 49.56 | 5.51 | 0.00 | 406.48 | 8.30 | 388.18 | 35.75 | 12.65 | 17.45 | 18.30 | 44.05 | 1.46 | 54.11 | |
| 2 | 936.3 | 0.0 | 53.48 | 35.02 | 50.05 | 5.75 | 0.00 | 410.52 | 8.55 | 401.87 | 35.75 | 12.65 | 16.69 | 19.06 | 44.30 | 1.51 | 53.15 | |
| 3 | 936.3 | 0.0 | 54.00 | 35.37 | 50.56 | 6.01 | 0.00 | 414.43 | 8.82 | 405.61 | 35.73 | 12.65 | 15.93 | 19.80 | 44.55 | 1.56 | 52.21 | |
| 4 | 936.3 | 0.0 | 54.54 | 35.72 | 51.07 | 6.28 | 0.00 | 418.18 | 9.08 | 409.08 | 35.70 | 12.65 | 15.18 | 20.52 | 44.79 | 1.61 | 51.29 | |
| 5 | 936.3 | 0.0 | 55.08 | 36.08 | 51.57 | 6.57 | 0.00 | 421.77 | 9.37 | 412.40 | 35.63 | 12.65 | 14.42 | 21.21 | 45.00 | 1.66 | 50.38 | |
| 6 | 936.3 | 0.0 | 55.63 | 36.44 | 52.06 | 6.86 | 0.00 | 425.18 | 9.68 | 415.52 | 35.57 | 12.65 | 13.66 | 21.91 | 45.23 | 1.72 | 49.48 | |
| 7 | 936.3 | 0.0 | 56.19 | 36.81 | 52.51 | 7.17 | 0.00 | 428.40 | 9.96 | 418.44 | 35.48 | 12.65 | 12.90 | 22.58 | 45.44 | 1.78 | 48.59 | |
| 8 | 936.3 | 0.0 | 56.75 | 37.18 | 53.14 | 7.49 | 0.00 | 431.41 | 10.27 | 421.14 | 35.38 | 12.65 | 12.14 | 23.24 | 45.65 | 1.84 | 47.71 | |
| 9 | 936.3 | 0.0 | 57.32 | 37.55 | 53.67 | 7.83 | 0.00 | 434.20 | 10.59 | 423.61 | 35.25 | 12.65 | 11.38 | 23.87 | 45.84 | 1.91 | 46.86 | |
| 10 | 936.3 | 0.0 | 57.89 | 37.92 | 54.20 | 8.18 | 0.00 | 436.74 | 10.92 | 425.82 | 35.10 | 12.65 | 10.62 | 24.48 | 46.02 | 1.98 | 46.02 | |
| 11 | 936.3 | 0.0 | 58.47 | 38.30 | 54.75 | 8.55 | 0.00 | 439.02 | 11.26 | 427.76 | 34.94 | 12.65 | 9.86 | 25.06 | 46.20 | 2.05 | 45.19 | |
| 12 | 936.3 | 0.0 | 59.06 | 38.68 | 55.30 | 8.94 | 0.00 | 441.02 | 11.61 | 429.41 | 34.75 | 12.65 | 9.10 | 25.65 | 46.36 | 2.13 | 44.39 | |
| 13 | 936.3 | 0.0 | 59.65 | 39.07 | 55.85 | 9.34 | 0.00 | 442.72 | 11.97 | 430.75 | 34.54 | 12.65 | 8.34 | 26.20 | 46.51 | 2.22 | 43.60 | |
| 14 | 936.3 | 0.0 | 60.25 | 39.46 | 56.41 | 9.78 | 0.00 | 444.10 | 12.34 | 431.78 | 34.31 | 12.65 | 7.58 | 26.72 | 46.65 | 2.30 | 42.85 | |
| 15 | 936.3 | 0.0 | 60.85 | 39.86 | 56.97 | 10.20 | 0.00 | 445.14 | 12.72 | 432.42 | 34.05 | 12.65 | 6.83 | 27.22 | 46.77 | 2.40 | 42.10 | |
| 16 | 936.3 | 0.0 | 61.46 | 40.28 | 57.54 | 10.66 | 0.00 | 445.83 | 13.11 | 432.72 | 33.77 | 12.65 | 6.07 | 27.70 | 46.88 | 2.50 | 41.38 | |
| 17 | 936.3 | 0.0 | 62.07 | 40.66 | 58.12 | 11.14 | 0.00 | 446.13 | 13.52 | 432.61 | 33.46 | 12.65 | 5.31 | 28.15 | 46.96 | 2.62 | 40.67 | |
| 18 | 936.3 | 0.0 | 62.69 | 41.06 | 58.70 | 11.64 | 0.00 | 446.02 | 13.94 | 432.08 | 33.12 | 12.65 | 4.55 | 28.57 | 47.06 | 2.74 | 39.96 | |
| 19 | 936.3 | 0.0 | 63.32 | 41.47 | 59.29 | 12.16 | 0.00 | 445.47 | 14.37 | 431.10 | 32.76 | 12.65 | 3.79 | 28.97 | 47.13 | 2.87 | 39.33 | |
| 20 | 936.3 | 0.0 | 63.95 | 41.88 | 59.88 | 12.71 | 0.00 | 444.46 | 14.82 | 429.64 | 32.35 | 12.65 | 3.03 | 29.32 | 47.17 | 3.01 | 38.69 | |
| 21 | 936.3 | 0.0 | 64.59 | 42.31 | 60.48 | 13.28 | 0.00 | 442.96 | 15.27 | 427.68 | 31.93 | 12.65 | 2.27 | 29.66 | 47.20 | 3.16 | 38.08 | |
| 22 | 936.3 | 0.0 | 65.23 | 42.73 | 61.07 | 13.88 | 0.00 | 440.95 | 15.75 | 425.20 | 31.44 | 12.65 | 1.51 | 29.93 | 47.19 | 3.33 | 37.51 | |
| 23 | 936.3 | 0.0 | 65.89 | 43.18 | 61.69 | 14.50 | 0.00 | 438.38 | 16.24 | 422.14 | 30.95 | 12.65 | 0.75 | 30.20 | 47.19 | 3.52 | 36.95 | |
| 24 | 936.3 | 0.0 | 66.54 | 43.56 | 62.30 | 15.16 | 0.00 | 435.23 | 16.74 | 418.48 | 30.40 | 12.65 | 0.00 | 30.40 | 47.14 | 3.73 | 36.48 | |
| Sum | | | 3163.32 | 940.65 | 0 | 934.78 | 0 | 1287.89 | 316.25 | 227.56 | 1080.31 | 193.328 | 966.962 | 2222.67 | | | 2.12 | |

Note: Net Operation Income = Sales Revenue - O/M Cost - Royalty - Depreciation
 Income before Tax = Net Operation Income - Interest Payment
 Current Asset in Cash = Net Operation Income + Depreciation - Debt Service Ratio = Current Asset in Cash / (Principal Repay. + Interest Payment)
 The year 25 onwards are not printed in the above table intentionally.

Table 18.4-10 Financial Analysis (1/4) Summary of Financial Analysis

| | | | |
|---|-------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (Mid) | |
| Case: - B (Base) | | | |
| Construction Cost | 1,184.08 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 25.0% | 75.0% | |
| Debt / Equity | Debt | Equity | |
| | 70.0% | 30.0% | |
| Installed Capacity | 238.0 MW | | |
| Generation Energy | 1,052.0 GWh | | |
| Sending-end Energy | 936.3 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 281.81 M.US\$ | | |
| After Price Escalation | 351.31 M.US\$ | | |
| Financial Budget | 417.43 M.US\$ | | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 26.36 | 79.05 |
| | Loan Amount | 61.48 | 184.42 |
| | IDC | 16.54 | 49.58 |
| | Royalty | - | 0.00 |
| | Total | 104.38 | 313.05 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 10.00% | | |
| Financial Indices | | | |
| Averaged Debt Service Coverage | | 1.11 | |
| Financial Internal Rate of Return | | 2.76% | |
| FIRR Calculation Period | | 10 years | |
| BOT Period | | 25 Years | |
| FIRR for the BOT Period | | 13.60% | |
| General Inflation | | | |
| Foreign | | | 2.80% |
| Domestic | | | 4.50% |
| Financial Conditions | | | |
| Interest Rate for IDC | | | 10.00% |
| Interest after Operation | | | 10.00% |
| Repayment Period | | | 10 yr |
| Graced Period | | | 5 yr |
| Government Own finance | | | 0.00% |
| Income Statement | | M.US\$ | |
| Sales Revenue | | | 3,163.32 |
| Operating Expense | | | 2,227.06 |
| Financial Expense | | | 110.66 |
| Net Income before Tax | | | 825.60 |
| Income Tax | | | (158.32) |
| Net Income | | | 667.28 |
| To the Government | | M.US\$ | |
| Royalty | | | 316.35 |
| Income Tax | | | 158.324 |
| Interest Payment to Equity | | | - |
| Net Income | | | 474.674 |
| Financial Generation Cost in | | 54.80 | |
| Year 0 for the project life time | | | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-10 Financial Analysis (2/4) Construction Disbursement and Loan Amount

| Case: - B (Base) | | Xe Namnoy (Mid) | | Equity Proportions | | Price Escalation per annum | | Finance Condition | | Total Construction Cost (M.US\$) | | | | | | |
|------------------------|-----------------------------------|-----------------|---------|----------------------------------|-------------------|----------------------------|---------|---------------------|----------|----------------------------------|---------|-----------------|----------------|----------|---------|--------|
| Dam Site: Installed | | 238.00 MW | | Lao PDR | 25.0% | F/C Portion | 2.8% | IDC | 10.00 % | LAO PDR | PRV.SCT | Total | | | | |
| Generation Energy | | 1,052.0 GWh | | Private | 75.0% | L/C Portion | 4.5% | Interest Rate | 10.00 % | Own Finance | 79.05 | 105.41 | | | | |
| Salable Energy | | 936.3 GWh | | Debt/Equity Ratio | | | | Repayment Period | 10 years | Principal Loan | 184.42 | 245.90 | | | | |
| Project Cost | | 1184.08 \$/Kw | | Debt | 70.0% | Exporting Ratio | 100.0% | Graced Period | 5 years | IDC | 49.58 | 66.12 | | | | |
| F/C | | 237.58 M.US\$ | | Equity | 30.0% | Exp. Price (\$/MWh) | 52.410 | LAO Own Finance | 0.00 % | Total | 313.05 | 417.43 | | | | |
| L/C | | 44.23 M.US\$ | | Royalty for Construction | 0.0% | Dom. Price (\$/MWh) | 34.330 | | | Equity / Royalty Fee | 26.36 | 0.00 | | | | |
| Total | | 281.81 M.US\$ | | Royalty from Operation | 10.0% | | | | | | | | | | | |
| Year | Disbursement before Escalation | Price Index | | Disbursement after Escalation | Total Disburse | Finance Proportion | | Own Finance Portion | | Loan Portion | | Loan Cumulative | Royalty Fee | | | |
| | | for F/C | for L/C | | | Laos PDR | PRV.SCT | Laos Equity | PRV.SCT | Laos PDR | PRV.SCT | | | Laos PDR | PRV.SCT | M.US\$ |
| -10 | 0.00 | 1.0000 | 1.0000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -9 | 0.00 | 1.0280 | 1.0450 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -8 | 0.00 | 1.0568 | 1.0920 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -7 | 0.00 | 1.0864 | 1.1412 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -6 | 0.00 | 1.1168 | 1.1925 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -5 | 21.50 | 1.1481 | 1.2462 | 24.68 | 33.71 | 8.43 | 25.28 | 2.53 | 7.58 | 5.90 | 17.70 | 5.90 | 17.70 | 0.59 | 1.77 | 0.00 |
| -4 | 36.99 | 1.1802 | 1.3023 | 43.66 | 54.07 | 13.52 | 40.55 | 4.06 | 12.17 | 9.46 | 28.38 | 15.36 | 46.08 | 1.54 | 4.61 | 0.00 |
| -3 | 64.46 | 1.2133 | 1.3609 | 78.21 | 93.32 | 23.33 | 69.99 | 7.00 | 21.00 | 16.33 | 48.99 | 31.69 | 95.07 | 3.17 | 9.51 | 0.00 |
| -2 | 74.34 | 1.2472 | 1.4221 | 92.72 | 109.46 | 27.37 | 82.09 | 8.21 | 24.63 | 19.16 | 57.46 | 50.85 | 152.53 | 5.09 | 15.25 | 0.00 |
| -1 | 40.29 | 1.2821 | 1.4861 | 51.66 | 60.75 | 15.19 | 45.56 | 4.56 | 13.67 | 10.63 | 31.89 | 61.48 | 184.42 | 6.15 | 18.44 | 0.00 |
| 0 | 0.00 | 1.3180 | 1.5530 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sum | 237.58 | | | 290.93 | 351.31 | 87.84 | 263.47 | 26.36 | 79.05 | 61.48 | 184.42 | 16.54 | 49.58 | 16.54 | 49.58 | 0.00 |

Table 18.4-10 Financial Analysis (3/4) Income Statement

| | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|--|-----------------|--|---------------------|--|--------|--|---------------------|--|-------|--|-----------|--|-----------------|--|------------------------|--|-------|--|-----------------------|--|--------|--|
| Case: - B (Base) | | Xe Namnoy (Mid) | | Exporting Ratio | | 100.0% | | Exp Price (\$/MWh) | | 52.41 | | O/M cost | | 1.5% of T. Deb | | Income Tax | | 20.0% | | Initial F.A. (M.US\$) | | 417.43 | |
| Dum Site: | | 238 MW | | Domestic Use | | 0.0% | | Dom. Price (\$/MWh) | | 34.33 | | Fuel Cost | | 0.00 \$/MWh | | Royalty from Operation | | 10.0% | | Life Time (Years) | | 50 | |
| Generation Energy | | 1052.0 GWh | | Increase of D. Use | | 2.0% | | Exp. Escalation | | 1.00% | | P Repay. | | 24.58 M.US\$/pa | | Private | | 25.0% | | Initial Dep. (M.US\$) | | 8.35 | |
| Salable Energy | | 936.3 GWh | | Financial Condition | | | | Dom. Escalation | | 1.00% | | P Repay. | | 24.58 M.US\$/pa | | Dividend | | 75.0% | | F/C Escalation | | 2.8% | |
| Construction Cost | | 281.81 M.US\$ | | Interest Rate (%) | | 10 | | Dom. Escalation | | 1.00% | | P Repay. | | 24.58 M.US\$/pa | | Dividend | | 2.5% | | L/C Escalation | | 4.5% | |
| | | | | Repayment P. (yr) | | 10 | | | | | | | | | | | | | | Equity Escalation | | 3.1% | |

| Year | Selling Revenue | | Sales Revenue | O/M Cost | Royalty | Y. Start Fixed Asset | Depreciation | Y. End Fixed Asset | Net Operation Income | Principal Repayment | Cum. of P. Repayment | Interest Payment | Income before Tax | Income Tax | Net Income after Tax | Current Asset in Cash | Debt Service Ratio | Export Price DSC=1.5 \$/MWh | | | | |
|------|-----------------|--------|---------------|----------|---------|----------------------|--------------|--------------------|----------------------|---------------------|----------------------|------------------|-------------------|------------|----------------------|-----------------------|--------------------|-----------------------------|--|----------------------------------|--|------|
| | Stable Energy | Export | | | | | | | | | | | | | | | | | | | | |
| | Domestic | Export | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | M.US\$ | | | | | | |
| 0 | 936.3 | 0.0 | 52.41 | 34.33 | 49.07 | 5.27 | 4.91 | 417.43 | 8.35 | 408.08 | 30.54 | 24.59 | 22.13 | 8.41 | 8.41 | 38.89 | 0.83 | 85.72 | | | | |
| 1 | 936.3 | 0.0 | 52.93 | 34.67 | 49.56 | 5.51 | 4.86 | 421.76 | 8.61 | 413.15 | 30.48 | 24.59 | 19.67 | 10.81 | 10.81 | 39.09 | 0.88 | 82.09 | | | | |
| 2 | 936.3 | 0.0 | 53.48 | 35.02 | 50.05 | 5.75 | 5.01 | 425.96 | 8.87 | 417.09 | 30.42 | 24.59 | 17.21 | 13.21 | 13.21 | 39.29 | 0.94 | 78.48 | | | | |
| 3 | 936.3 | 0.0 | 54.00 | 35.37 | 50.56 | 6.01 | 5.06 | 430.02 | 9.15 | 420.87 | 30.34 | 24.59 | 14.75 | 15.59 | 15.59 | 39.48 | 1.00 | 74.85 | | | | |
| 4 | 936.3 | 0.0 | 54.54 | 35.72 | 51.07 | 6.28 | 5.11 | 433.92 | 9.43 | 424.49 | 30.25 | 24.59 | 12.30 | 17.95 | 17.95 | 38.68 | 1.08 | 71.28 | | | | |
| 5 | 936.3 | 0.0 | 55.08 | 36.08 | 51.57 | 6.57 | 5.16 | 437.65 | 9.73 | 427.92 | 30.15 | 24.59 | 9.84 | 20.27 | 20.27 | 39.84 | 1.16 | 67.69 | | | | |
| 6 | 936.3 | 0.0 | 55.63 | 36.44 | 52.09 | 6.88 | 5.21 | 441.19 | 10.03 | 431.16 | 29.99 | 24.59 | 7.38 | 22.81 | 22.81 | 40.02 | 1.25 | 64.11 | | | | |
| 7 | 936.3 | 0.0 | 56.19 | 36.81 | 52.61 | 7.17 | 5.26 | 444.53 | 10.34 | 434.19 | 29.84 | 24.59 | 4.92 | 24.92 | 24.92 | 40.18 | 1.36 | 60.55 | | | | |
| 8 | 936.3 | 0.0 | 56.75 | 37.18 | 53.14 | 7.48 | 5.31 | 447.65 | 10.66 | 436.99 | 29.68 | 24.59 | 2.46 | 27.22 | 27.22 | 40.34 | 1.49 | 57.01 | | | | |
| 9 | 936.3 | 0.0 | 57.32 | 37.55 | 53.67 | 7.83 | 5.37 | 450.54 | 10.99 | 439.55 | 29.48 | 24.59 | 0.00 | 29.48 | 29.48 | 40.47 | 1.65 | 53.49 | | | | |
| 10 | 936.3 | 0.0 | 57.89 | 37.92 | 54.20 | 8.18 | 5.42 | 453.18 | 11.33 | 441.85 | 29.27 | 0.00 | 0.00 | 29.27 | 29.27 | 40.60 | 0.00 | 0.00 | | | | |
| 11 | 936.3 | 0.0 | 58.47 | 38.30 | 54.75 | 8.55 | 5.48 | 455.55 | 11.68 | 443.87 | 29.04 | 0.00 | 0.00 | 29.04 | 29.04 | 40.72 | 0.00 | 0.00 | | | | |
| 12 | 936.3 | 0.0 | 59.06 | 38.68 | 55.30 | 8.94 | 5.53 | 457.63 | 12.04 | 445.59 | 28.79 | 0.00 | 0.00 | 28.79 | 28.79 | 40.83 | 0.00 | 0.00 | | | | |
| 13 | 936.3 | 0.0 | 59.65 | 39.07 | 55.85 | 9.34 | 5.59 | 459.40 | 12.42 | 446.98 | 28.50 | 0.00 | 0.00 | 28.50 | 28.50 | 40.92 | 0.00 | 0.00 | | | | |
| 14 | 936.3 | 0.0 | 60.25 | 39.46 | 56.41 | 9.76 | 5.64 | 460.84 | 12.80 | 448.04 | 28.21 | 0.00 | 0.00 | 28.21 | 28.21 | 41.01 | 0.00 | 0.00 | | | | |
| 15 | 936.3 | 0.0 | 60.85 | 39.86 | 56.97 | 10.20 | 5.70 | 461.93 | 13.20 | 448.73 | 27.87 | 0.00 | 0.00 | 27.87 | 27.87 | 41.07 | 0.00 | 0.00 | | | | |
| 16 | 936.3 | 0.0 | 61.46 | 40.26 | 57.54 | 10.66 | 5.75 | 462.64 | 13.61 | 449.03 | 27.52 | 0.00 | 0.00 | 27.52 | 27.52 | 41.13 | 0.00 | 0.00 | | | | |
| 17 | 936.3 | 0.0 | 62.07 | 40.66 | 58.12 | 11.14 | 5.81 | 462.95 | 14.03 | 448.92 | 27.14 | 0.00 | 0.00 | 27.14 | 27.14 | 41.17 | 0.00 | 0.00 | | | | |
| 18 | 936.3 | 0.0 | 62.69 | 41.06 | 58.70 | 11.64 | 5.87 | 462.84 | 14.48 | 448.38 | 26.73 | 0.00 | 0.00 | 26.73 | 26.73 | 41.19 | 0.00 | 0.00 | | | | |
| 19 | 936.3 | 0.0 | 63.32 | 41.47 | 59.29 | 12.16 | 5.93 | 462.28 | 14.91 | 447.37 | 26.29 | 0.00 | 0.00 | 26.29 | 26.29 | 41.20 | 0.00 | 0.00 | | | | |
| 20 | 936.3 | 0.0 | 63.95 | 41.89 | 59.08 | 12.71 | 5.99 | 461.24 | 15.37 | 445.87 | 25.81 | 0.00 | 0.00 | 25.81 | 25.81 | 41.18 | 0.00 | 0.00 | | | | |
| 21 | 936.3 | 0.0 | 64.59 | 42.31 | 60.48 | 13.28 | 6.05 | 459.89 | 15.85 | 443.84 | 25.30 | 0.00 | 0.00 | 25.30 | 25.30 | 41.15 | 0.00 | 0.00 | | | | |
| 22 | 936.3 | 0.0 | 65.23 | 42.73 | 61.07 | 13.88 | 6.11 | 457.90 | 16.34 | 441.26 | 24.74 | 0.00 | 0.00 | 24.74 | 24.74 | 41.08 | 0.00 | 0.00 | | | | |
| 23 | 936.3 | 0.0 | 65.88 | 43.16 | 61.69 | 14.50 | 6.17 | 454.94 | 16.85 | 438.09 | 24.17 | 0.00 | 0.00 | 24.17 | 24.17 | 41.02 | 0.00 | 0.00 | | | | |
| 24 | 936.3 | 0.0 | 66.54 | 43.59 | 62.30 | 15.18 | 6.23 | 451.87 | 17.37 | 434.30 | 23.54 | 0.00 | 0.00 | 23.54 | 23.54 | 40.81 | 0.00 | 0.00 | | | | |
| Sum | | | 3163.32 | 940.65 | 316.35 | | | 970.06 | | 938.26 | | 245.90 | 110.56 | 825.6 | 158.324 | 667.276 | 1908.32 | | | Average DSC for Repayment Period | | 1.11 |

Note: Net Operation Income = Sales Revenue - O/M Cost - Royalty - Depreciation
 Income before Tax = Net Operation Income - Interest Payment
 Current Asset in Cash = Net Operation Income + Depreciation - Debt Service Ratio = Current Asset in Cash / (Principal Repay. + Interest Payment)
 The year 25 onwards are not printed in the above table intentionally.

Table 18.4-10 Financial Analysis (4/4) Financial Internal Rate of Return

| Case - B (Base) | | | | | Total construction Cost (M.US\$) | | | Discount Rate | |
|-------------------|-----------------|-----------------------|-------|----------------------|----------------------------------|---------|--------|----------------------|--------|
| Dem Site: | Ye Namnoy (Mid) | Equity Proportions | | | | | 10.0% | | |
| Install Capacity | 238 MW | Lao PDR | 25.0% | Finance Items | LAO PDR | PRV SCT | Total | Discounted to Year 0 | |
| Generation Energy | 1052 GWh | Private | 75.0% | Own Finance | 26.36 | 79.05 | 105.41 | B(enefit) | 401.6 |
| | | Royalty from Operatio | 10.0% | Principal Loan | 61.48 | 184.42 | 245.9 | C(cost) | 303.29 |
| Construction Cost | 281.81 M.US\$ | Lao PDR | 25.0% | IDC | 16.54 | 49.58 | 66.12 | B/C | 1.32 |
| | | Private | 75.0% | Total | 104.38 | 313.05 | 417.43 | FIRR for the Year | 9 |
| | | | | Equity / Royalty Fee | 26.36 | 0 | | FIRR | 2.76% |

(Unit M.US\$)

| Year | Own Finance | IDC | Principal Repay. | Interest Payment | Royalty | Total Cost | Net Income after Tax | Depreciation + Interest | Total Income | NPV Convert Index | Net Present Value | | NPV Cumulative | | Balance B - C before Discount |
|------|-------------|-------|------------------|------------------|---------|------------|----------------------|-------------------------|--------------|-------------------|-------------------|---------|----------------|-------------|-------------------------------|
| | | | | | | | | | | | Cost | Benefit | Cost (C) | Benefit (B) | |
| -10 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.5937 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -9 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.3579 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -8 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 2.1436 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -7 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 1.9487 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -6 | 0.00 | 0.00 | | | 0.00 | 0.00 | | | 0.00 | 1.7716 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -5 | 10.11 | 2.36 | | | 0.00 | 10.11 | | | 0.00 | 1.6105 | 16.28 | 0.00 | 16.28 | 0.00 | -10.11 |
| -4 | 16.23 | 6.15 | | | 0.00 | 16.23 | | | 0.00 | 1.4641 | 23.76 | 0.00 | 40.04 | 0.00 | -16.23 |
| -3 | 28.00 | 12.68 | | | 0.00 | 28.00 | | | 0.00 | 1.3310 | 37.27 | 0.00 | 77.31 | 0.00 | -28.00 |
| -2 | 32.84 | 20.34 | | | 0.00 | 32.84 | | | 0.00 | 1.2100 | 39.74 | 0.00 | 117.05 | 0.00 | -32.84 |
| -1 | 18.23 | 24.59 | | | 0.00 | 18.23 | | | 0.00 | 1.1000 | 20.05 | 0.00 | 137.10 | 0.00 | -18.23 |
| 0 | | | 24.59 | 22.13 | | 24.59 | 8.41 | 30.48 | 38.89 | 1.0000 | 24.59 | 38.89 | 161.69 | 38.89 | 14.90 |
| 1 | | | 24.59 | 19.67 | | 24.59 | 10.81 | 28.28 | 39.09 | 0.9091 | 22.35 | 35.54 | 184.04 | 74.43 | 14.50 |
| 2 | | | 24.59 | 17.21 | | 24.59 | 13.21 | 26.08 | 39.29 | 0.8264 | 20.32 | 32.47 | 204.36 | 106.90 | 14.70 |
| 3 | | | 24.59 | 14.75 | | 24.59 | 15.59 | 23.90 | 39.49 | 0.7513 | 18.47 | 29.67 | 222.83 | 136.57 | 14.90 |
| 4 | | | 24.59 | 12.30 | | 24.59 | 17.95 | 21.73 | 39.68 | 0.6830 | 16.79 | 27.10 | 239.62 | 163.67 | 15.09 |
| 5 | | | 24.59 | 9.84 | | 24.59 | 19.57 | 19.57 | 35.79 | 0.6209 | 15.27 | 22.22 | 254.89 | 185.69 | 11.20 |
| 6 | | | 24.59 | 7.38 | | 24.59 | 18.09 | 17.41 | 35.50 | 0.5645 | 13.88 | 20.04 | 268.77 | 205.93 | 10.91 |
| 7 | | | 24.59 | 4.92 | | 24.59 | 19.94 | 15.26 | 35.20 | 0.5132 | 12.62 | 18.06 | 281.39 | 223.99 | 10.61 |
| 8 | | | 24.59 | 2.46 | | 24.59 | 21.78 | 13.12 | 34.90 | 0.4665 | 11.47 | 16.28 | 292.86 | 240.27 | 10.31 |
| 9 | | | 24.59 | 0.00 | | 24.59 | 23.58 | 10.99 | 34.57 | 0.4241 | 10.43 | 14.66 | 303.29 | 254.93 | 9.96 |
| 10 | | | 0.00 | 0.00 | | 0.00 | 23.42 | 11.33 | 34.75 | 0.3855 | 0.00 | 13.40 | 303.29 | 268.33 | 34.75 |
| 11 | | | 0.00 | 0.00 | | 0.00 | 23.23 | 11.68 | 34.91 | 0.3505 | 0.00 | 12.24 | 303.29 | 280.57 | 34.91 |
| 12 | | | 0.00 | 0.00 | | 0.00 | 23.03 | 12.04 | 35.07 | 0.3186 | 0.00 | 11.17 | 303.29 | 291.74 | 35.07 |
| 13 | | | 0.00 | 0.00 | | 0.00 | 22.80 | 12.42 | 35.22 | 0.2897 | 0.00 | 10.20 | 303.29 | 301.94 | 35.22 |
| 14 | | | 0.00 | 0.00 | | 0.00 | 22.57 | 12.80 | 35.37 | 0.2633 | 0.00 | 9.31 | 303.29 | 311.25 | 35.37 |
| 15 | | | 0.00 | 0.00 | | 0.00 | 22.30 | 13.20 | 35.50 | 0.2394 | 0.00 | 8.50 | 303.29 | 319.75 | 35.50 |
| 16 | | | 0.00 | 0.00 | | 0.00 | 22.02 | 13.61 | 35.63 | 0.2176 | 0.00 | 7.75 | 303.29 | 327.50 | 35.63 |
| 17 | | | 0.00 | 0.00 | | 0.00 | 21.71 | 14.03 | 35.74 | 0.1978 | 0.00 | 7.07 | 303.29 | 334.57 | 35.74 |
| 18 | | | 0.00 | 0.00 | | 0.00 | 21.38 | 14.46 | 35.84 | 0.1799 | 0.00 | 6.45 | 303.29 | 341.02 | 35.84 |
| 19 | | | 0.00 | 0.00 | | 0.00 | 21.03 | 14.91 | 35.94 | 0.1635 | 0.00 | 5.88 | 303.29 | 346.90 | 35.94 |
| 20 | | | 0.00 | 0.00 | | 0.00 | 20.65 | 15.37 | 36.02 | 0.1486 | 0.00 | 5.35 | 303.29 | 352.25 | 36.02 |
| 21 | | | 0.00 | 0.00 | | 0.00 | 20.24 | 15.85 | 36.09 | 0.1351 | 0.00 | 4.88 | 303.29 | 357.13 | 36.09 |
| 22 | | | 0.00 | 0.00 | | 0.00 | 19.79 | 16.34 | 36.13 | 0.1228 | 0.00 | 4.44 | 303.29 | 361.57 | 36.13 |
| 23 | | | 0.00 | 0.00 | | 0.00 | 19.34 | 16.85 | 36.19 | 0.1117 | 0.00 | 4.04 | 303.29 | 365.61 | 36.19 |
| 24 | | | 0.00 | 0.00 | | 0.00 | 18.83 | 17.37 | 36.20 | 0.1015 | 0.00 | 3.67 | 303.29 | 369.28 | 36.20 |
| 25 | | | | | | 0.00 | 18.31 | 17.91 | 36.22 | 0.0923 | 0.00 | 3.34 | 303.29 | 372.62 | 36.22 |
| 26 | | | | | | 0.00 | 17.75 | 18.47 | 36.22 | 0.0839 | 0.00 | 3.04 | 303.29 | 375.66 | 36.22 |
| 27 | | | | | | 0.00 | 17.15 | 19.04 | 36.19 | 0.0763 | 0.00 | 2.76 | 303.29 | 378.42 | 36.19 |
| 28 | | | | | | 0.00 | 16.53 | 19.63 | 36.16 | 0.0693 | 0.00 | 2.51 | 303.29 | 380.93 | 36.16 |
| 29 | | | | | | 0.00 | 15.84 | 20.24 | 36.08 | 0.0630 | 0.00 | 2.27 | 303.29 | 383.20 | 36.08 |
| 30 | | | | | | 0.00 | 15.14 | 20.86 | 36.00 | 0.0573 | 0.00 | 2.06 | 303.29 | 385.26 | 36.00 |
| 31 | | | | | | 0.00 | 14.40 | 21.51 | 35.91 | 0.0521 | 0.00 | 1.87 | 303.29 | 387.13 | 35.91 |
| 32 | | | | | | 0.00 | 13.59 | 22.18 | 35.77 | 0.0474 | 0.00 | 1.70 | 303.29 | 388.83 | 35.77 |
| 33 | | | | | | 0.00 | 12.75 | 22.87 | 35.62 | 0.0431 | 0.00 | 1.54 | 303.29 | 390.37 | 35.62 |
| 34 | | | | | | 0.00 | 11.87 | 23.57 | 35.44 | 0.0391 | 0.00 | 1.39 | 303.29 | 391.76 | 35.44 |
| 35 | | | | | | 0.00 | 10.93 | 24.30 | 35.23 | 0.0356 | 0.00 | 1.25 | 303.29 | 393.01 | 35.23 |
| 36 | | | | | | 0.00 | 9.94 | 25.06 | 35.00 | 0.0323 | 0.00 | 1.13 | 303.29 | 394.14 | 35.00 |
| 37 | | | | | | 0.00 | 8.90 | 25.84 | 34.74 | 0.0294 | 0.00 | 1.02 | 303.29 | 395.16 | 34.74 |
| 38 | | | | | | 0.00 | 7.80 | 26.64 | 34.44 | 0.0267 | 0.00 | 0.92 | 303.29 | 396.06 | 34.44 |
| 39 | | | | | | 0.00 | 6.66 | 27.46 | 34.12 | 0.0243 | 0.00 | 0.83 | 303.29 | 396.91 | 34.12 |
| 40 | | | | | | 0.00 | 5.43 | 28.31 | 33.74 | 0.0221 | 0.00 | 0.75 | 303.29 | 397.66 | 33.74 |
| 41 | | | | | | 0.00 | 4.15 | 29.19 | 33.34 | 0.0201 | 0.00 | 0.67 | 303.29 | 398.33 | 33.34 |
| 42 | | | | | | 0.00 | 2.81 | 30.10 | 32.91 | 0.0183 | 0.00 | 0.60 | 303.29 | 398.93 | 32.91 |
| 43 | | | | | | 0.00 | 1.39 | 31.03 | 32.42 | 0.0166 | 0.00 | 0.54 | 303.29 | 399.47 | 32.42 |
| 44 | | | | | | 0.00 | -0.11 | 31.99 | 31.88 | 0.0151 | 0.00 | 0.48 | 303.29 | 399.95 | 31.88 |
| 45 | | | | | | 0.00 | -2.07 | 32.98 | 30.91 | 0.0137 | 0.00 | 0.42 | 303.29 | 400.37 | 30.91 |
| 46 | | | | | | 0.00 | -4.12 | 34.00 | 29.88 | 0.0125 | 0.00 | 0.37 | 303.29 | 400.74 | 29.88 |
| 47 | | | | | | 0.00 | -6.27 | 35.06 | 28.79 | 0.0113 | 0.00 | 0.33 | 303.29 | 401.07 | 28.79 |
| 48 | | | | | | 0.00 | -8.52 | 36.14 | 27.62 | 0.0103 | 0.00 | 0.28 | 303.29 | 401.35 | 27.62 |
| 49 | | | | | | 0.00 | -10.90 | 37.26 | 26.36 | 0.0094 | 0.00 | 0.25 | 303.29 | 401.60 | 26.36 |
| Sum | 105.41 | 66.12 | 245.90 | 110.66 | 0.00 | 351.31 | 667.27 | 1080.72 | 1747.99 | | | 303.29 | 401.60 | | 1396.68 |

Note: Financial Generation Cost (FGC) is calculated as below.
 $FGC = NPV(\text{Own Finance} + IDC + \text{Royalty} + \text{O\&M Cost} + \text{Principle Repayment} + \text{Interest Payment}) / NPV(\text{Generation Energy})$
 Total Cost does not include IDC and Interest Payment for the purpose of FIRR calculation.

Financial Generation Cost in Year 0 at 10.0% discount rate 54.8 \$/MWh

Table 18.4-11 Financial Analysis

Summary of Financial Analysis

| | | | |
|--|----------------|-------------------------|------------|
| Site Name | | Xe Namnoy (Mid) | |
| Case: - A (Case 1: Allocated T/L system) | | | |
| Construction Cost | | 1,328.74 US\$/kW | |
| Equity Share | | Lao PDR | Private S. |
| | | 100.0% | 0.0% |
| Debt / Equity | | Debt | Equity |
| | | 90.0% | 10.0% |
| Installed Capacity | 238.0 MW | | |
| Generation Energy | 1,052.0 GWh | | |
| Sending-end Energy | 936.3 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 316.24 M.US\$ | | |
| After Price Escalation | 394.03 M.US\$ | | |
| Financial Budget | | | |
| 451.22 M.US\$ | | | |
| Financial Items | | Lao PDR | Private S. |
| Own Finance | 39.40 0.00 | | |
| Loan Amount | 354.63 0.00 | | |
| IDC | 57.19 0.00 | | |
| Royalty | - 0.00 | | |
| Total | 451.22 0.00 | | |
| Export/Domestic Ratio for Saleable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 0.00% | | |
| Financial Indeces | | | |
| Averaged Debt Service Coverage | | 1.84 | |
| Financial Internal Rate of Return | | 38.75% | |
| FIRR Calculation Period | | 25 years | |
| BOT Period | | Years | |
| FIRR for the BOT Period | | - | |
| General Inflation | | | |
| Foreign | | 2.80% | |
| Domestic | | 4.50% | |
| Financial Conditions | | | |
| Interest Rate for IDC | | 6.00% | |
| Interest after Operation | | 6.00% | |
| Repayment Period | | 25 yr | |
| Graced Period | | 5 yr | |
| Government Own finance | | 10.00% | |
| Income Statement M.US\$ | | | |
| Sales Revenue | | 3,163.32 | |
| Operating Expense | | 2,103.57 | |
| Financial Expense | | 255.00 | |
| Net Income before Tax | | 804.75 | |
| Income Tax | | (152.14) | |
| Net Income | | 652.61 | |
| To the Government M.US\$ | | | |
| Royalty | | 0 | |
| Income Tax | | 152.14 | |
| Interest Payment to Equity | | - | |
| Net Income | | 152.14 | |
| Financial Generation Cost in Year 0 for the project life time | | 44.71 | |
| 10.0% Discount Rate | | \$/MWh | |

Table 18.4-12 Financial Analysis

Summary of Financial Analysis

| | | | |
|---|-------------------------|------------------------|--|
| Site Name | | Xe Namnoy (Mid) | |
| Case: - A (Case 2: Independent T/L) | | | |
| Construction Cost | 1,306.46 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 100.0% | 0.0% | |
| Debt / Equity | Debt | Equity | |
| | 90.0% | 10.0% | |
| Installed Capacity | 238.0 MW | | |
| Generation Energy | 1,052.0 GWh | | |
| Sending-end Energy | 936.3 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 310.70 M.US\$ | | |
| After Price Escalation | 387.14 M.US\$ | | |
| Financial Budget | 443.33 M.US\$ | | |
| Financial Items | Lao PDR | Private S. | |
| Own Finance | 38.72 | 0.00 | |
| Loan Amount | 348.42 | -0.00 | |
| IDC | 56.19 | 0.00 | |
| Royalty | - | 0.00 | |
| Total | 443.33 | -0.00 | |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 0.00% | | |

| | |
|--|-----------------|
| Financial Indices | |
| Averaged Debt Service Coverage | 1.88 |
| Financial Internal Rate of Return | 39.46% |
| FIRR Calculation Period | 25 years |
| BOT Period | - Years |
| FIRR for the BOT Period | - |

| | |
|-----------------------------|--------|
| General Inflation | |
| Foreign | 2.80% |
| Domestic | 4.50% |
| Financial Conditions | |
| Interest Rate for IDC | 6.00% |
| Interest after Operation | 6.00% |
| Repayment Period | 25 yr |
| Graced Period | 5 yr |
| Government Own finance | 10.00% |

| | | |
|-------------------------|----------|---------------|
| Income Statement | | M.US\$ |
| Sales Revenue | 3,163.32 | |
| Operating Expense | 2,066.77 | |
| Financial Expense | 250.80 | |
| Net Income before Tax | 845.75 | |
| Income Tax | (158.25) | |
| Net Income | 687.50 | |

| | | |
|----------------------------|---------|---------------|
| To the Government | | M.US\$ |
| Royalty | 0 | |
| Income Tax | 158.254 | |
| Interest Payment to Equity | - | |
| Net Income | 158.254 | |

| | |
|---|---------------|
| Financial Generation Cost in | 43.92 |
| Year 0 for the project life time | |
| 10.0% Discount Rate | \$/MWh |

Table 18.4-13 Financial Analysis

Summary of Financial Analysis

| | | | |
|---|-------------------------|------------------------|-------------------|
| Site Name | | Xe Namnoy (Mid) | |
| Case: - B (Case 1: Allocated T/L system) | | | |
| Construction Cost | 1,328.74 US\$/kW | | |
| Equity Share | Lao PDR | Private S. | |
| | 25.0% | 75.0% | |
| Debt / Equity | Debt | Equity | |
| | 70.0% | 30.0% | |
| Installed Capacity | 238.0 MW | | |
| Generation Energy | 1,052.0 GWh | | |
| Sending-end Energy | 936.3 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 316.24 | M.US\$ | |
| After Price Escalation | 394.03 | M.US\$ | |
| Financial Budget | 468.16 | M.US\$ | |
| | Financial Items | Lao PDR | Private S. |
| | Own Finance | 29.56 | 88.66 |
| | Loan Amount | 68.96 | 206.85 |
| | IDC | 18.53 | 55.60 |
| | Royalty | - | 0.00 |
| | Total | 117.05 | 351.11 |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 | US\$/MWh | |
| Domestic | 34.33 | US\$/MWh | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 10.00% | | |

| | |
|--|-----------------|
| Financial Indeces | |
| Averaged Debt Service Coverage | 0.97 |
| Financial Internal Rate of Return | -3.73% |
| FIRR Calculation Period | 10 years |

| | |
|--------------------------------|-----------------|
| BOT Period | 25 Years |
| FIRR for the BOT Period | 11.15% |

| | |
|--------------------------|--------|
| General Inflation | |
| Foreign | 2.80% |
| Domestic | 4.50% |
| Financial Conditions | |
| Interest Rate for IDC | 10.00% |
| Interest after Operation | 10.00% |
| Repayment Period | 10 yr |
| Graced Period | 5 yr |
| Government Own finance | 0.00% |

| | |
|-------------------------|---------------|
| Income Statement | M.US\$ |
| Sales Revenue | 3,163.32 |
| Operating Expense | 2,459.28 |
| Financial Expense | 124.11 |
| Net Income before Tax | 579.93 |
| Income Tax | (126.71) |
| Net Income | 453.22 |

| | |
|----------------------------|---------------|
| To the Government | M.US\$ |
| Royalty | 316.35 |
| Income Tax | 126.706 |
| Interest Payment to Equity | - |
| Net Income | 443.056 |

| | |
|---|---------------|
| Financial Generation Cost in | 60.83 |
| Year 0 for the project life time | |
| 10.0% Discount Rate | \$/MWh |

Table 18.4-14 Financial Analysis

Summary of Financial Analysis

| | | | |
|---|----------------|-------------------------|-------------------|
| Site Name | | Xe Namnoy (Mid) | |
| Case: - B (Case 2: Independent T/L) | | | |
| Construction Cost | | 1,305.46 US\$/kW | |
| Equity Share | Lao PDR | Private S. | |
| | 25.0% | 75.0% | |
| Debt / Equity | Debt | Equity | |
| | 70.0% | 30.0% | |
| Installed Capacity | 238.0 MW | | |
| Generation Energy | 1,052.0 GWh | | |
| Sending-end Energy | 936.3 GWh | | |
| Construction Cost | | | |
| Before Price Escalation | 310.70 M.US\$ | | |
| After Price Escalation | 387.14 M.US\$ | | |
| Financial Budget | 459.97 M.US\$ | | |
| Financial Items | | Lao PDR | Private S. |
| Own Finance | 29.05 | 87.10 | |
| Loan Amount | 67.75 | 203.24 | |
| IDC | 18.21 | 54.62 | |
| Royalty | - | 0.00 | |
| Total | 115.01 | 344.96 | |
| Export/Domestic Ratio for Salable Energy | | | |
| Export | 100.0% | | |
| Domestic | 0.0% | | |
| Initial Power Tariff at year 0 | | | |
| Export | 52.41 US\$/MWh | | |
| Domestic | 34.33 US\$/MWh | | |
| Power Tariff Escalation | | | |
| Export | 1.00% | | |
| Domestic | 1.00% | | |
| Increase of Domestic Demand | 2.00% | | |
| Royalty for Construction Period | 0.00% | | |
| Royalty from Operation onwards | 10.00% | | |
| Financial Indeces | | | |
| Averaged Debt Service Coverage | | 0.99 | |
| Financial Internal Rate of Return | | -2.62% | |
| FIRR Calculation Period | | 10 years | |
| BOT Period | | | |
| FIRR for the BOT Period | | 11.51% | |
| General Inflation | | | |
| Foreign | 2.80% | | |
| Domestic | 4.50% | | |
| Financial Conditions | | | |
| Interest Rate for IDC | 10.00% | | |
| Interest after Operation | 10.00% | | |
| Repayment Period | 10 yr | | |
| Graced Period | 5 yr | | |
| Government Own finance | 0.00% | | |
| Income Statement | | M.US\$ | |
| Sales Revenue | 3,163.32 | | |
| Operating Expense | 2,421.75 | | |
| Financial Expense | 121.95 | | |
| Net Income before Tax | 619.62 | | |
| Income Tax | (131.41) | | |
| Net Income | 488.21 | | |
| To the Government | | M.US\$ | |
| Royalty | 316.35 | | |
| Income Tax | 131.408 | | |
| Interest Payment to Equity | - | | |
| Net Income | 447.758 | | |
| Financial Generation Cost in | | 59.86 | |
| Year 0 for the project life time | | | |
| 10.0% Discount Rate | | \$/MWh | |

19. Further Investigations

19. Further Investigations

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| Fig. 19.3-2 | Location of Geological Investigation for Feasibility Study in the Vicinity of Xe Kaman No. 1 Dam Site |
| Fig. 19.3-3 | Location of Geological Investigation for Feasibility Study in the Vicinity of Xe Namnoy Midstream Dam Site |
| Fig. 19.3-4 | Location of Geological Investigation for Feasibility Study along Waterway of Xe Namnoy Midstream Project |

19. Further Investigations

19.1 Meteorology and Hydrology

(1) Observation of Meteorology

At the observation stations in and around the Se Kong basin, it is necessary continuous observation of the data such as rain, temperature, humidity, wind velocity, wind direction and etc. Especially, observation of hourly rainfall is important.

(2) Observation of River Discharge

River discharge gauging stations in the Se Kong basin are very few. At present, there are gauging stations located at Sekong Town (Se Kong river), Attapu Town (Se Kong river), B. Fangdeng (Xe Kaman river) and B. Latsasin (Xe Namnoy river). It is necessary continuous observation at the gauging station with maintain the equipment.

It is important that the observation is not only the water level but also the velocity and the river cross section which are measured periodically.

19.2 Topographic Maps

On the Pre-feasibility Study, topographic maps 1/10,000 scale were prepared in the area of dam site and a part of reservoir for the three projects by aerial photogrammetry. The following topographic maps will be required to carry out on the Feasibility Study in future.

(1) Dam Sites

Topographic maps 1/1,000 scale will be required at the vicinity of dam site including the area of waterway, powerhouse.

(2) Reservoir Area

On the Pre-feasibility Study, all reservoir areas of the three projects were taken aerial photographs, but the topographic maps are only prepared a part of the reservoir areas. Therefore, preparation of the maps covered the remaining areas and related areas will be required.

19.3 Geological Survey

(1) Geological Investigations

To grasp geological condition, it is recommended that the following geological investigations be carried out on the Feasibility Study Stage.

a) Se Kong No.4 Project (Fig. 19.3-1)

| <u>Location</u> | <u>Seismic prospecting</u> | <u>Test pit</u> | <u>Core drilling</u> |
|-----------------|----------------------------|-----------------|-----------------------|
| Dam axis | - | - | 4 × 100 = 400 m |
| Waterway | - | - | 3 × 30 = 90 m |
| Spillway | - | - | 1 × 30 = 30 m |
| Quarry site | - | - | 1 × 50 = 50 m |
| | - | - | 1 × 100 = 100 m |
| Aggregate site | 1.5 km | 5 × 5 = 25 m | 5 × 10 = 50 m |
| Borrow area | 1.5 km | 5 × 10 = 50 m | 5 × 10 = 50 m |
| Total | 3.0 km | 75 m | 20 holes 770 m |

- Quarry site is planned at the right bank 1.5 km upstream.
- Aggregate site is planned at the river bed 2, 3 km upstream.
- Borrow areas are planned at the left bank 1 km downstream and 2.5 km upstream.

b) Xe Kaman No.1 Project (Fig. 19.3-2)

| <u>Location</u> | <u>Seismic prospecting</u> | <u>Test pit</u> | <u>Core drilling</u> |
|-----------------|----------------------------|-----------------|-----------------------|
| Dam axis | - | - | 3 × 100 = 300 m |
| Waterway | - | - | 2 × 30 = 60 m |
| | - | - | 1 × 50 = 50 m |
| Dam right bank | - | - | 1 × 50 = 50 m |
| Quarry site | - | - | 1 × 100 = 100 m |
| Aggregate site | 2.0 km | 5 × 5 = 25 m | 5 × 10 = 50 m |
| Total | 2.0 km | 25 m | 13 holes 610 m |

- Quarry site is planned at the right bank 1.5 km upstream.
- Aggregate site is planned at the river bed 2-3 km upstream.

c) Xe Namnoy Project (Fig. 19.3-3, -4)

c-1) Midstream Project

| <u>Location</u> | <u>Seismic prospecting</u> | <u>Test pit</u> | <u>Core drilling</u> |
|-----------------------|----------------------------|-----------------|--|
| Dam axis | -- | -- | 3 × 30 = 90 m 2 × 50 = 100 m 1 × 60 = 60 m |
| Xe Pian dam | -- | -- | 4 × 10 = 40 m |
| Waterway | -- | -- | 1 × 50 = 50 m 2 × 150 = 300 m |
| Penstock & powerhouse | 1.5 km | -- | 1 × 50 = 50 m 1 × 30 = 30 m |
| Quarry site | -- | -- | 1 × 50 = 50 m |
| Borrow area | 1.0 km | 10 × 5 = 50 m | 3 × 10 = 30 m |
| Total | 2.5 km | 50 m | 19 holes 800 m |

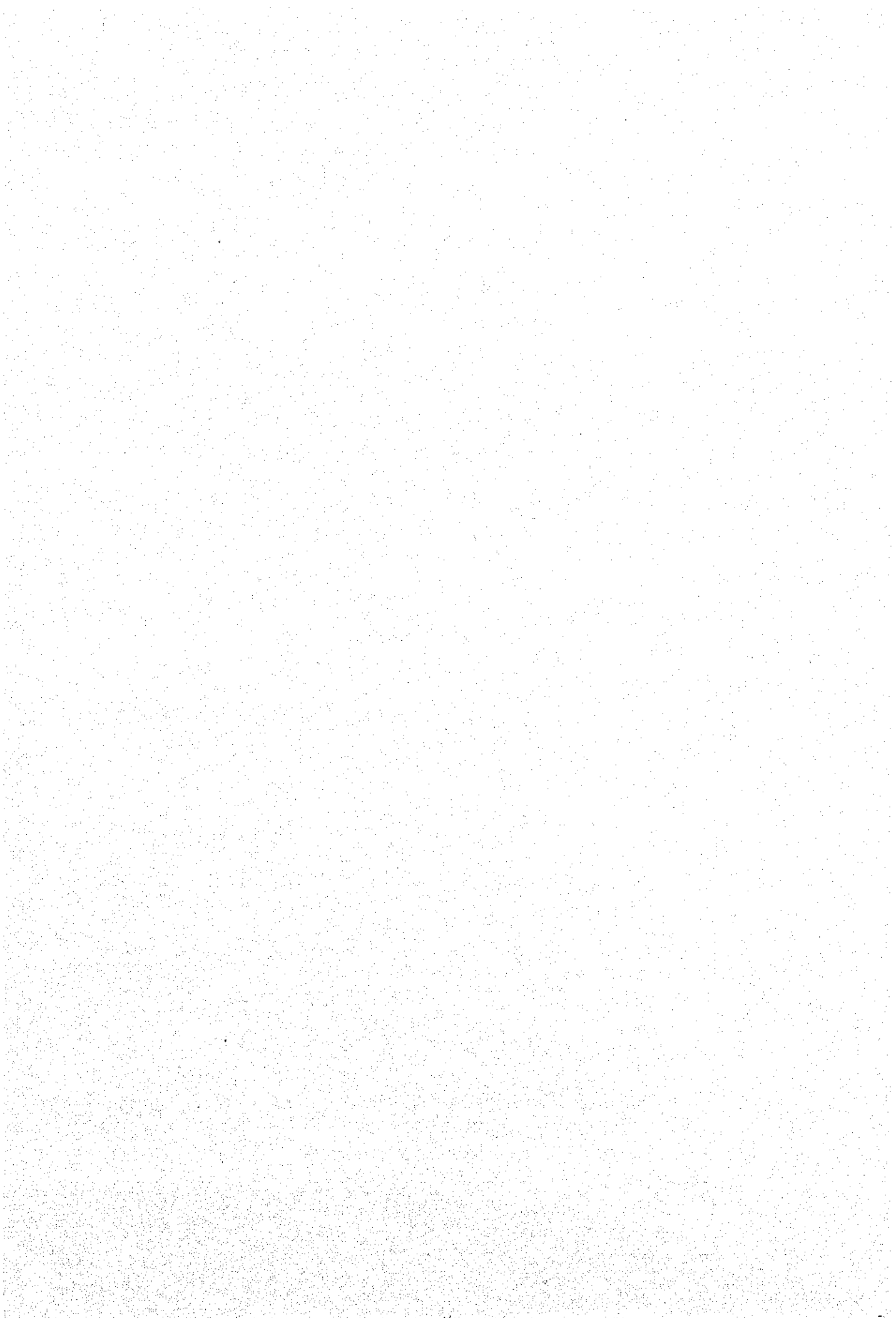
c-2) Downstream Project

| <u>Location</u> | <u>Seismic prospecting</u> | <u>Test pit</u> | <u>Core drilling</u> |
|-----------------------|----------------------------|-----------------|---|
| Dam axis | -- | -- | 3 × 30 = 90 m |
| Waterway & powerhouse | -- | -- | 1 × 80 = 80 m 1 × 50 = 50 m 1 × 20 = 20 m |
| Total | | | 6 holes 240 m |

(2) Geological Mapping

On the Feasibility Study Stage, it is required to prepare the geological maps of the area such as reservoir, dam site, waterway, powerhouse, quarry site and etc., referring the results of the geological investigations.

Especially, for Xe Namnoy Midstream Project, more detailed study related watertightness at the vicinity of the dam site where basalt lava is distributed will be required.



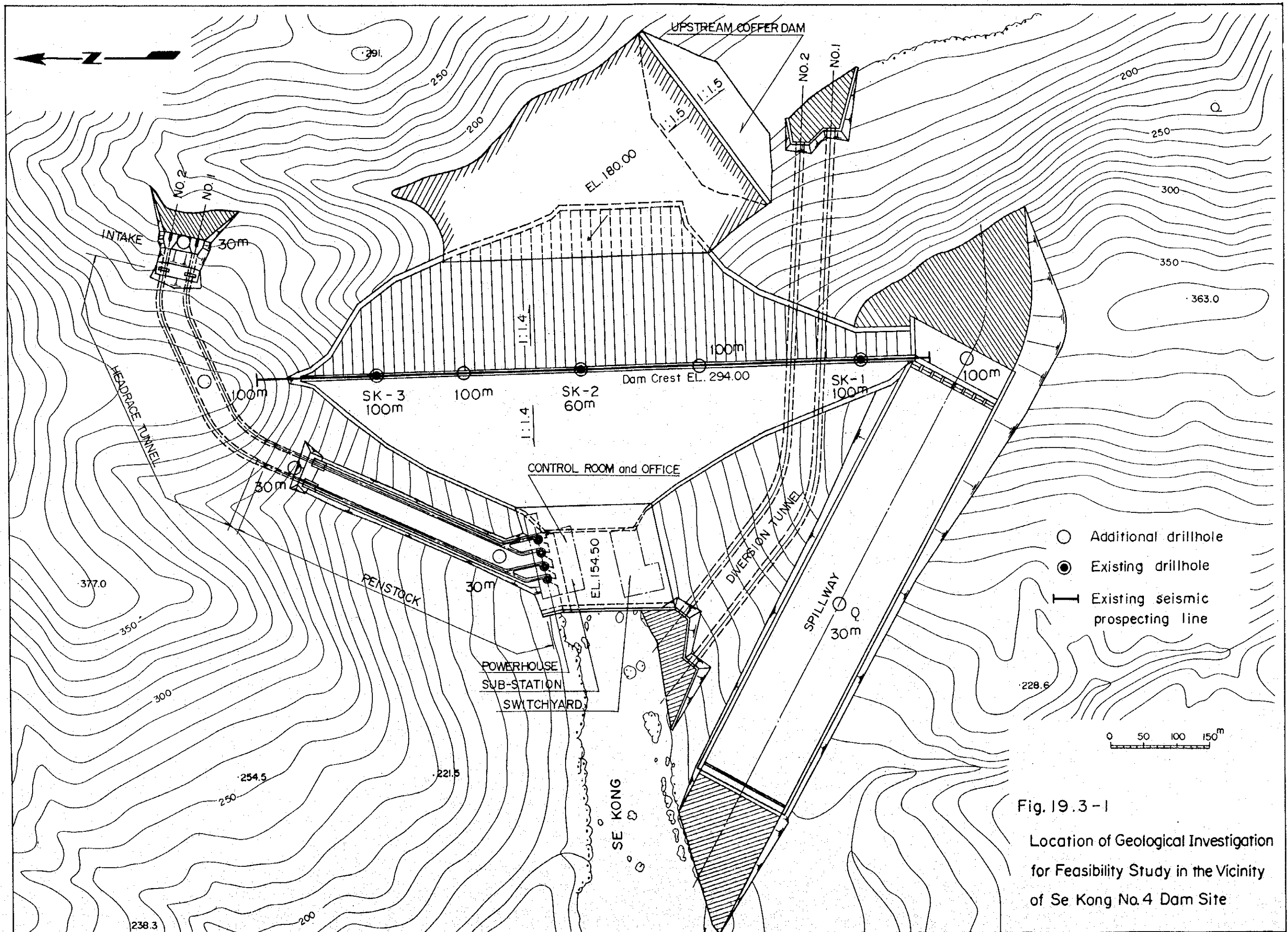
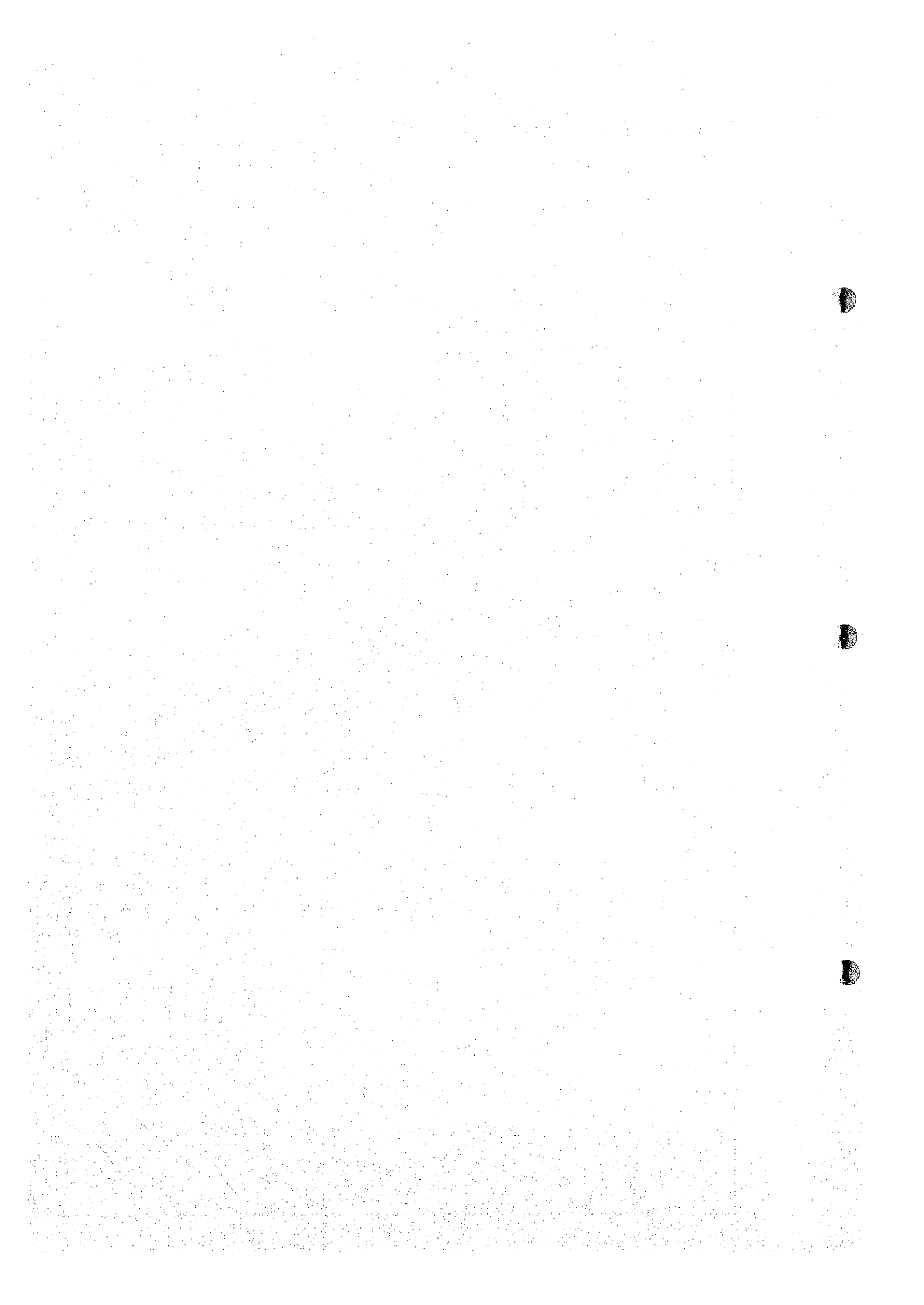


Fig. 19.3-1
 Location of Geological Investigation
 for Feasibility Study in the Vicinity
 of Se Kong No. 4 Dam Site



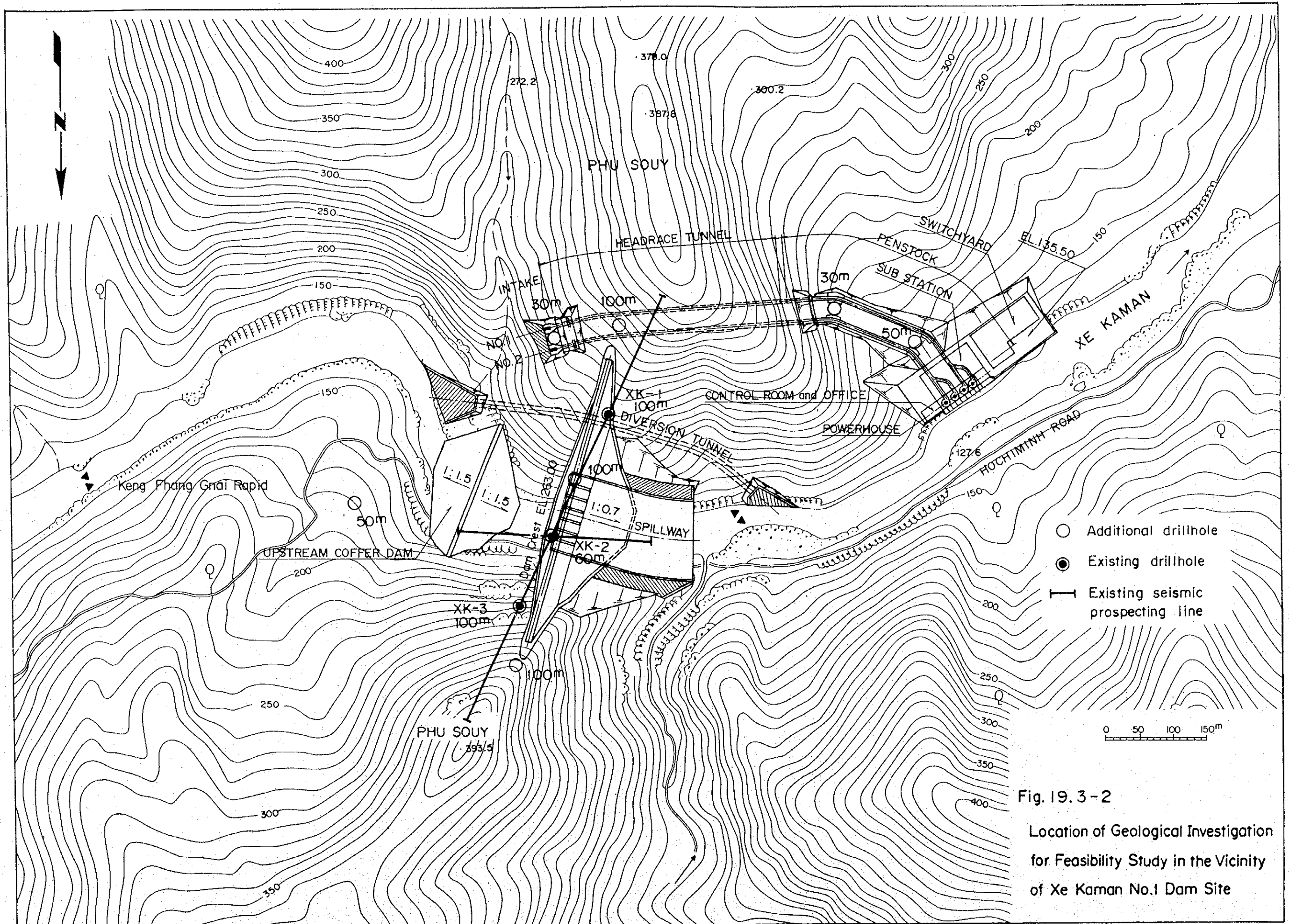
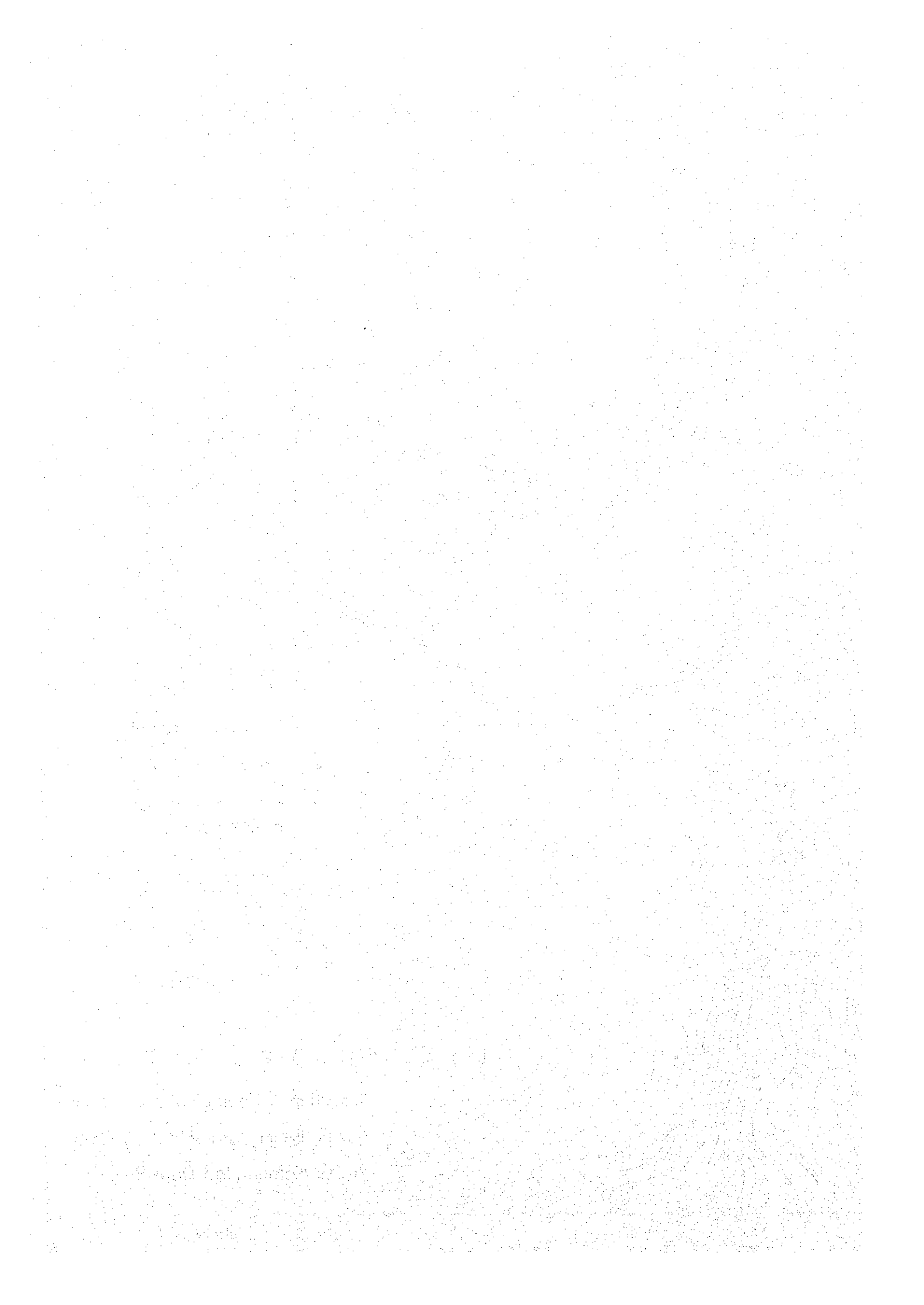
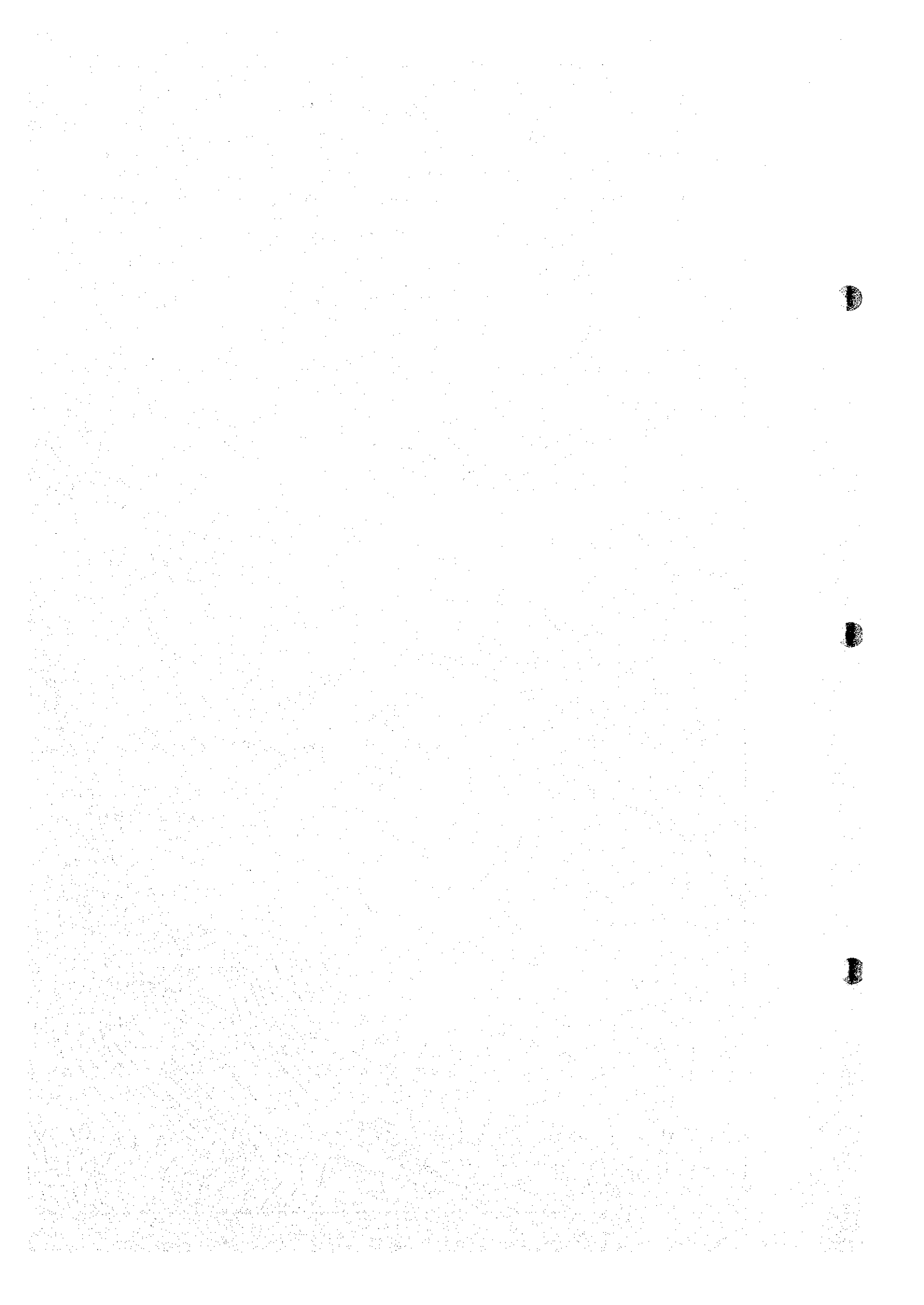


Fig. 19.3-2
 Location of Geological Investigation
 for Feasibility Study in the Vicinity
 of Xe Kaman No.1 Dam Site





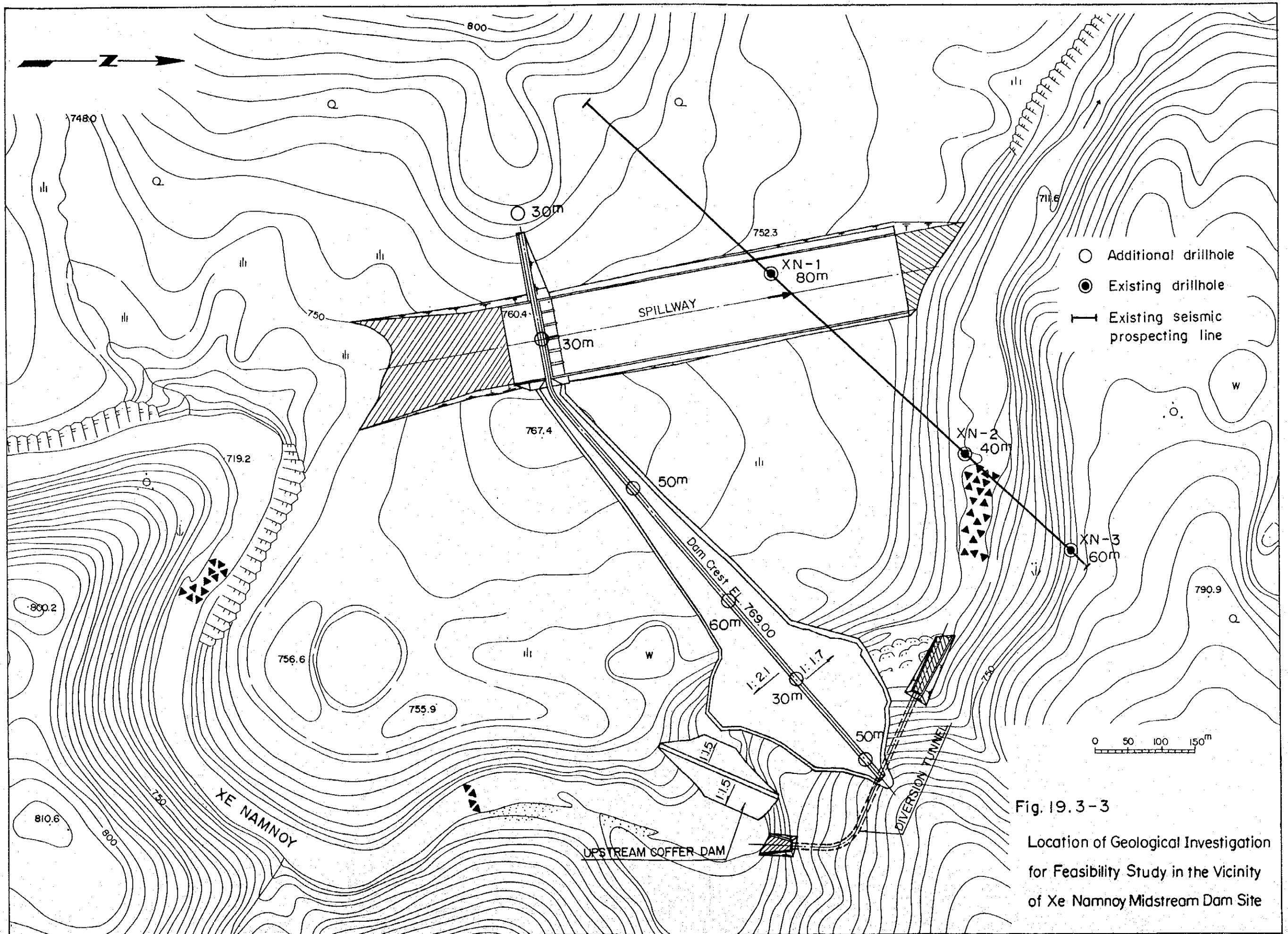
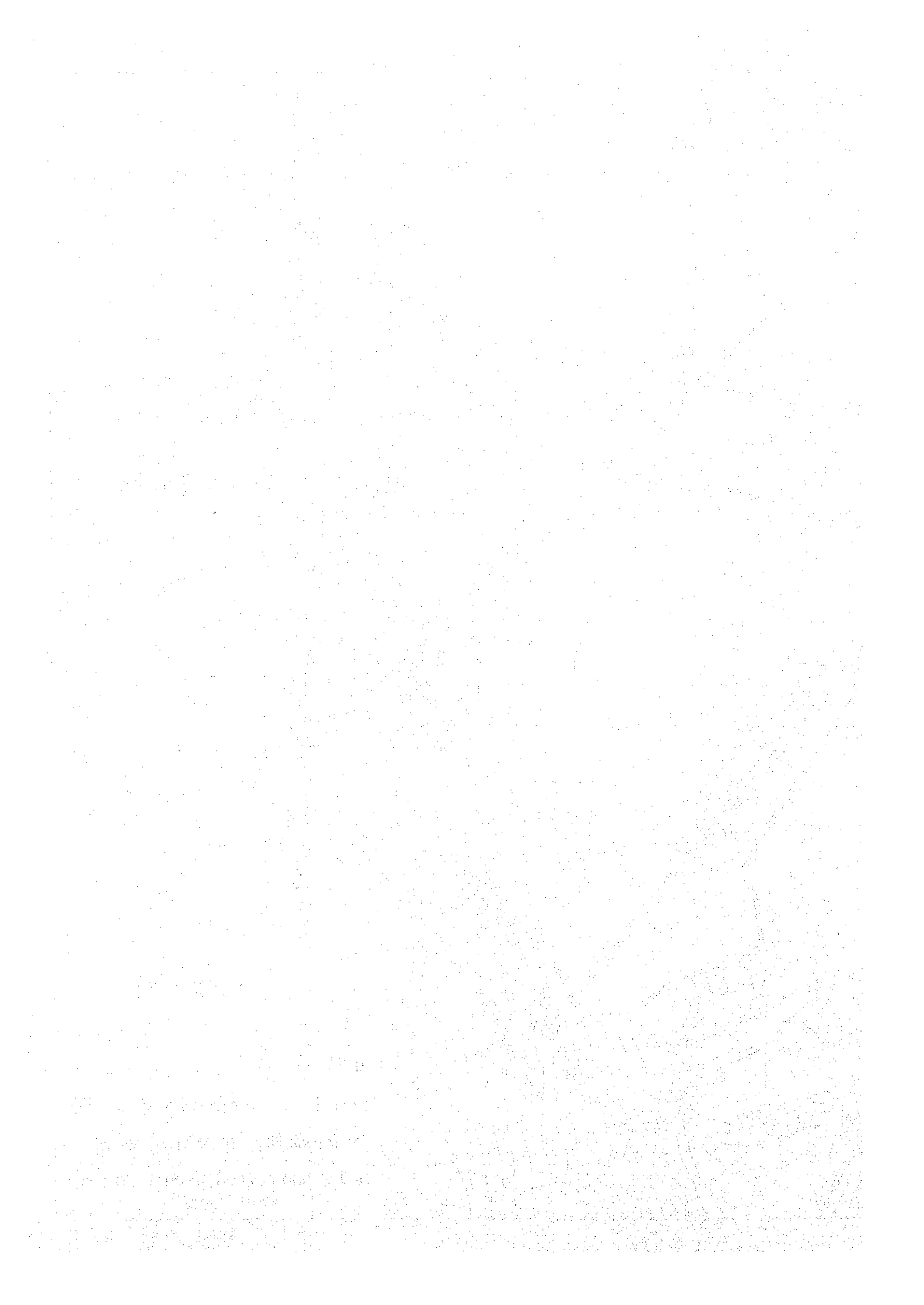
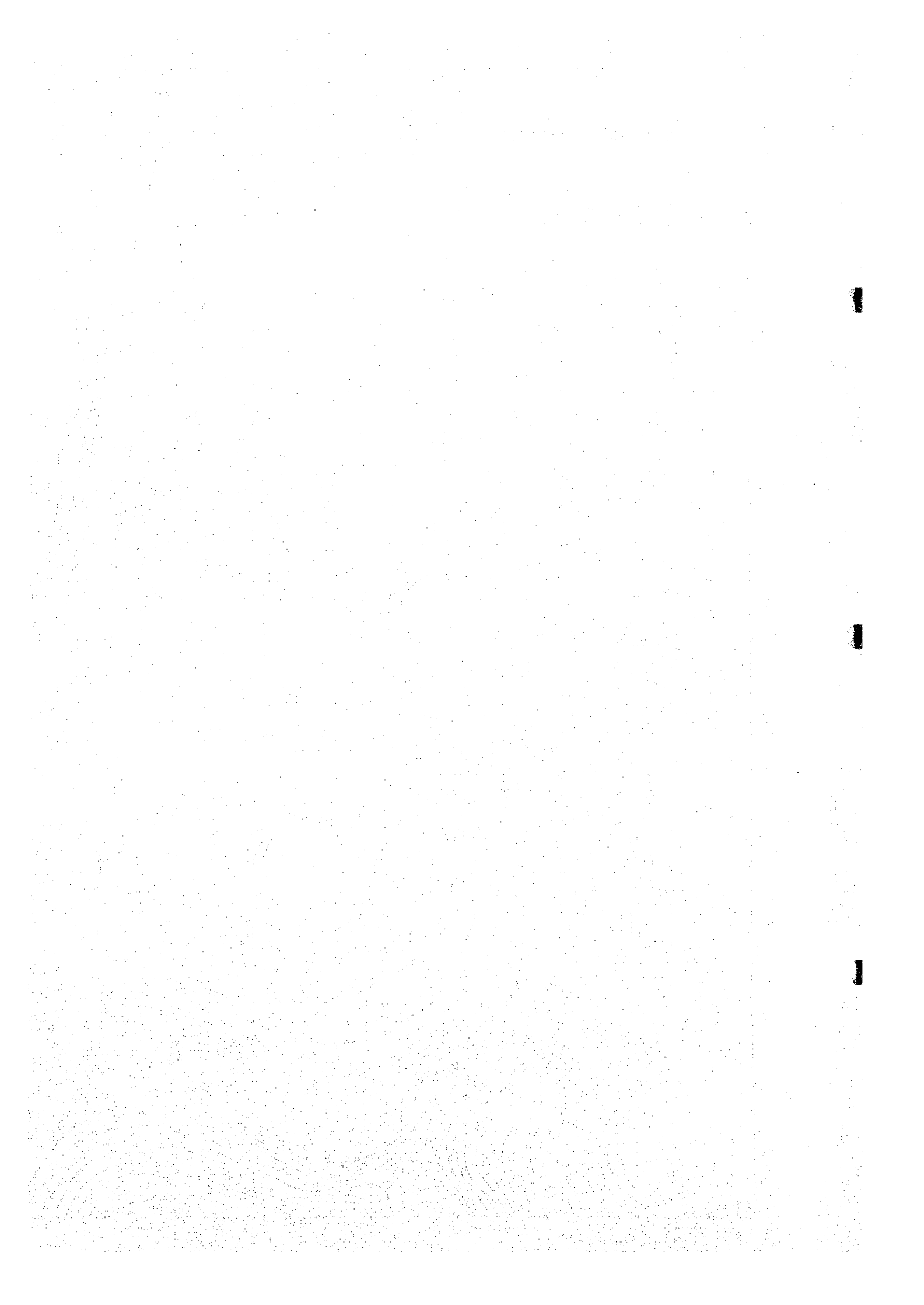
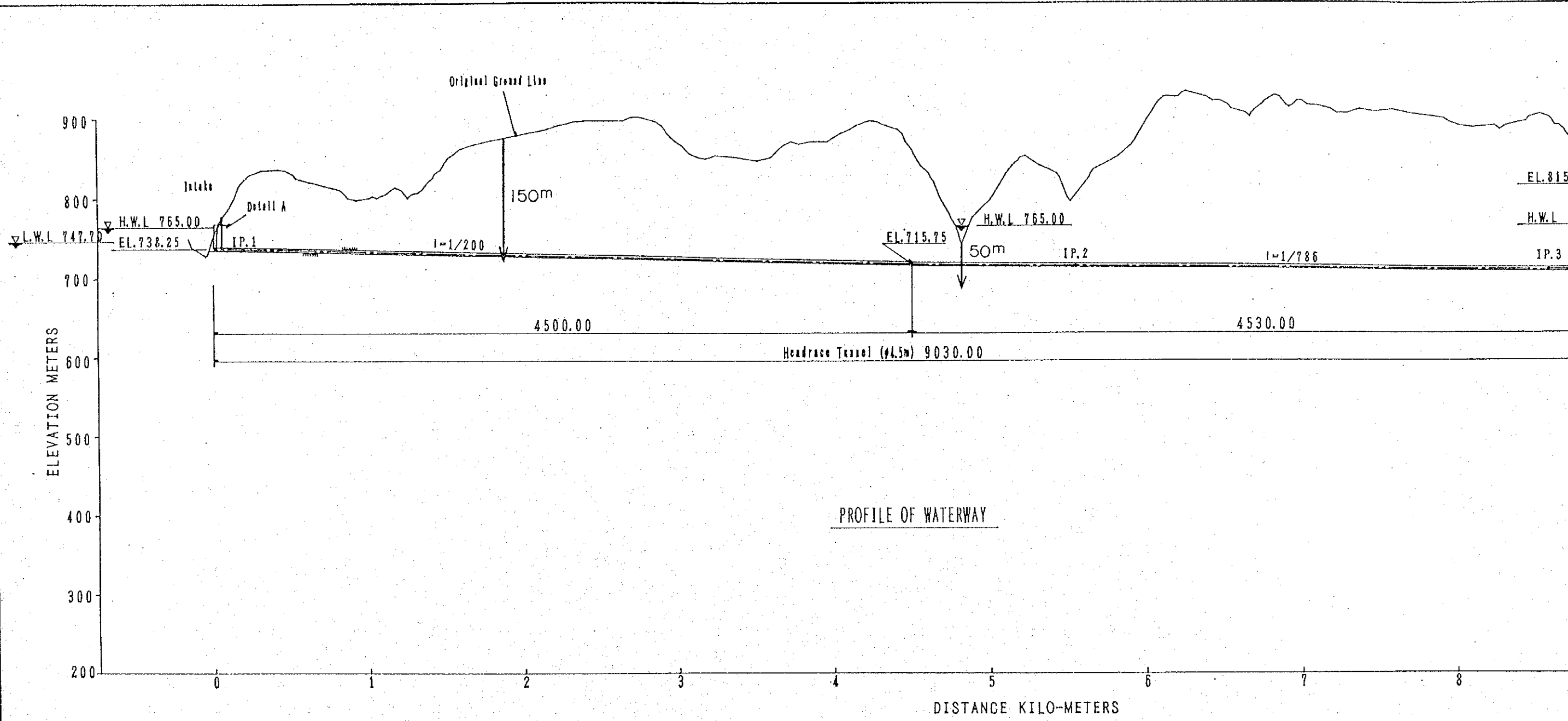


Fig. 19.3-3
 Location of Geological Investigation
 for Feasibility Study in the Vicinity
 of Xe Namnoy Midstream Dam Site

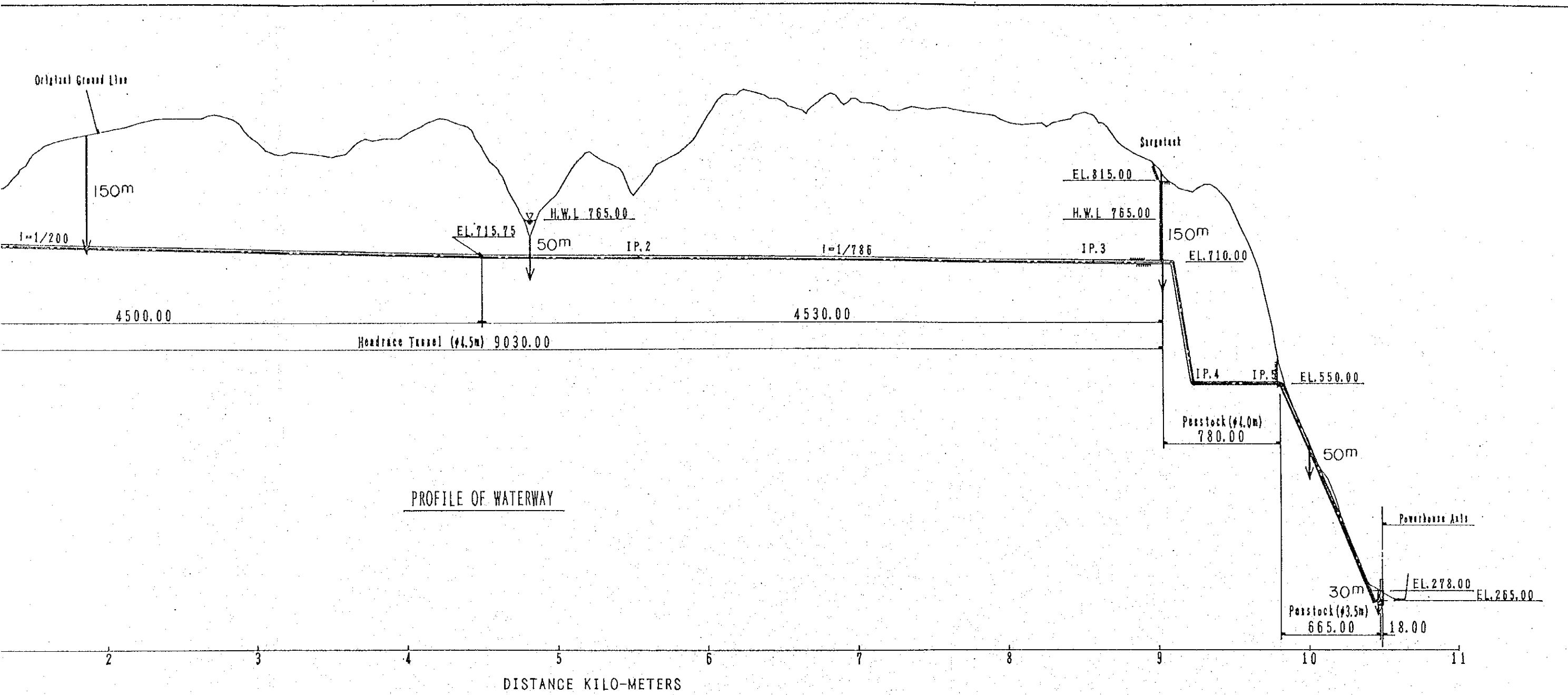






↓ Additional drillhole

11-61 (26) 19-11



PROFILE OF WATERWAY

↓ Additional drillhole

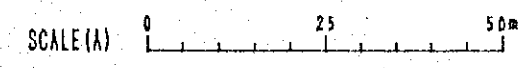
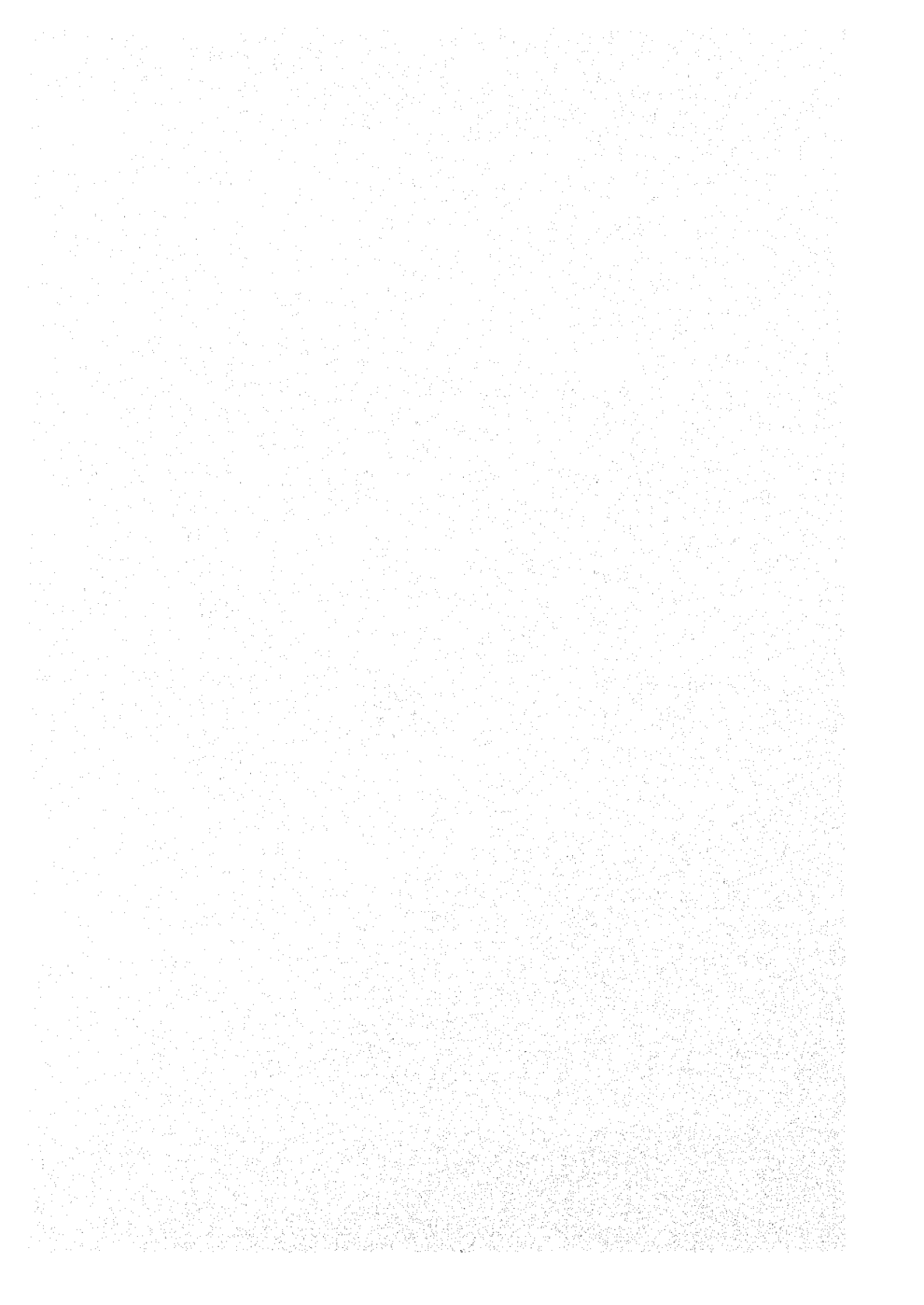


Fig. 19.3 - 4
 Location of Geological Investigation
 for Feasibility Study along
 Waterway of Xe Namnoy Midstream
 Project

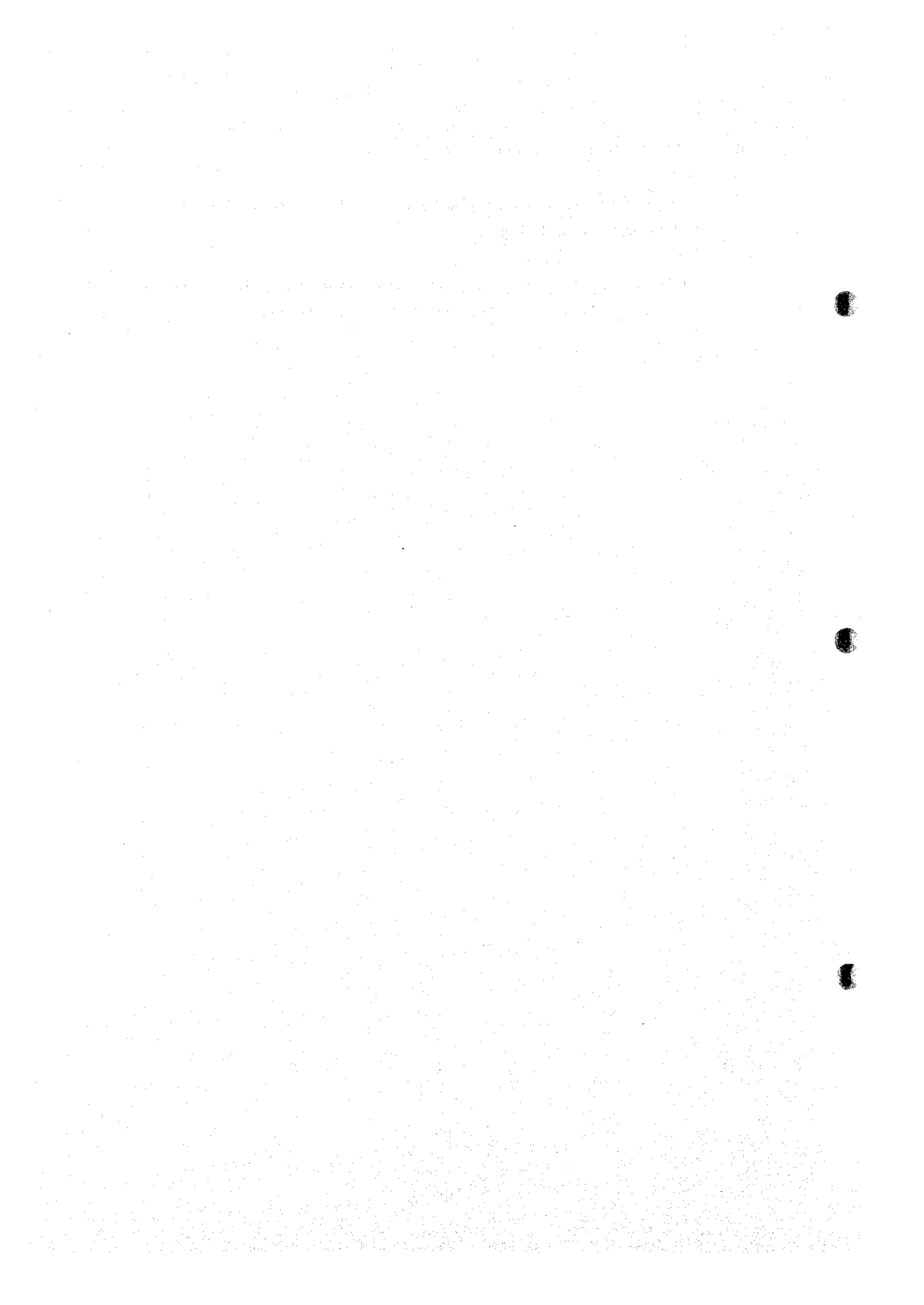
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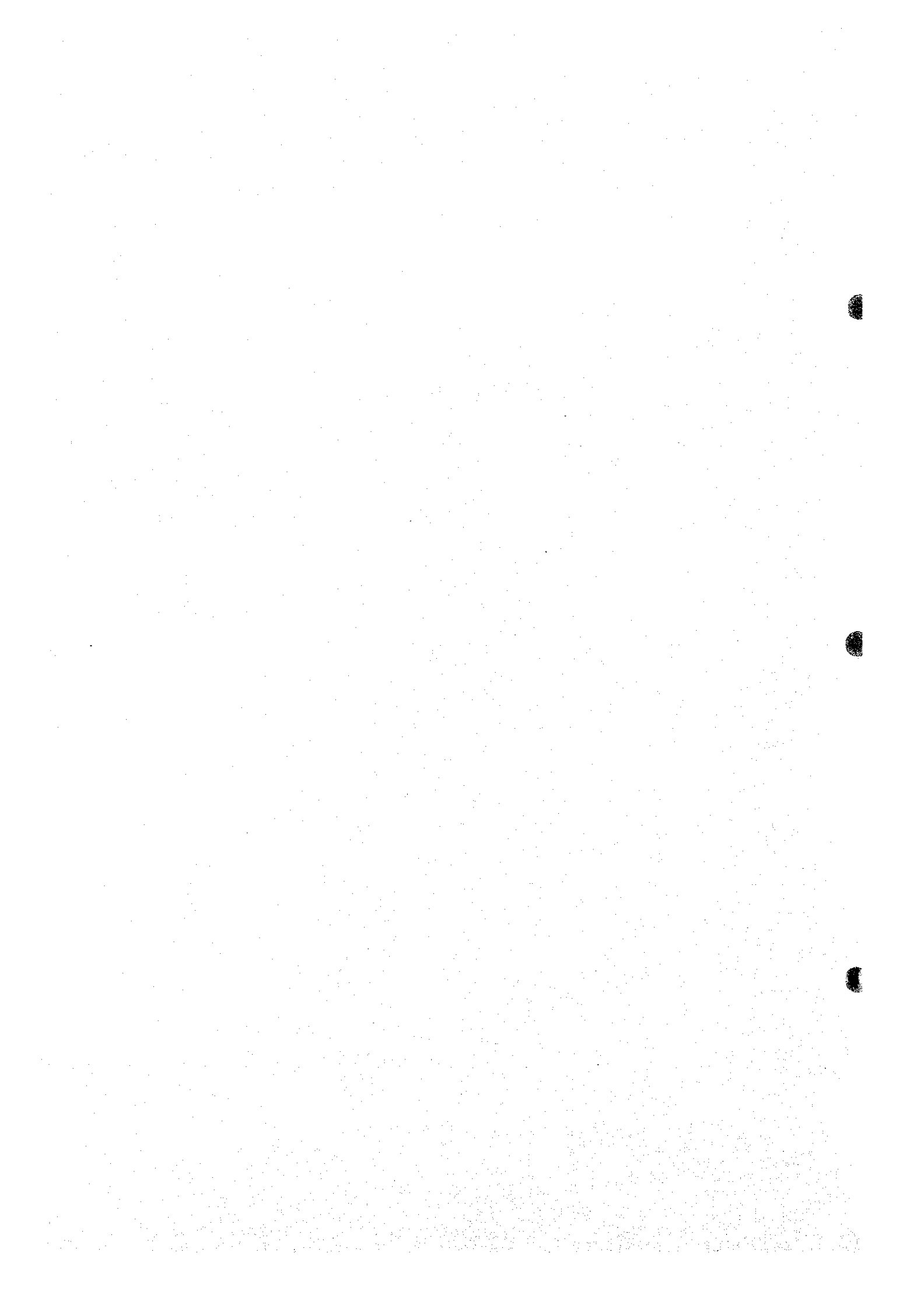
19.4 Survey on Environmental Impact and Compensation

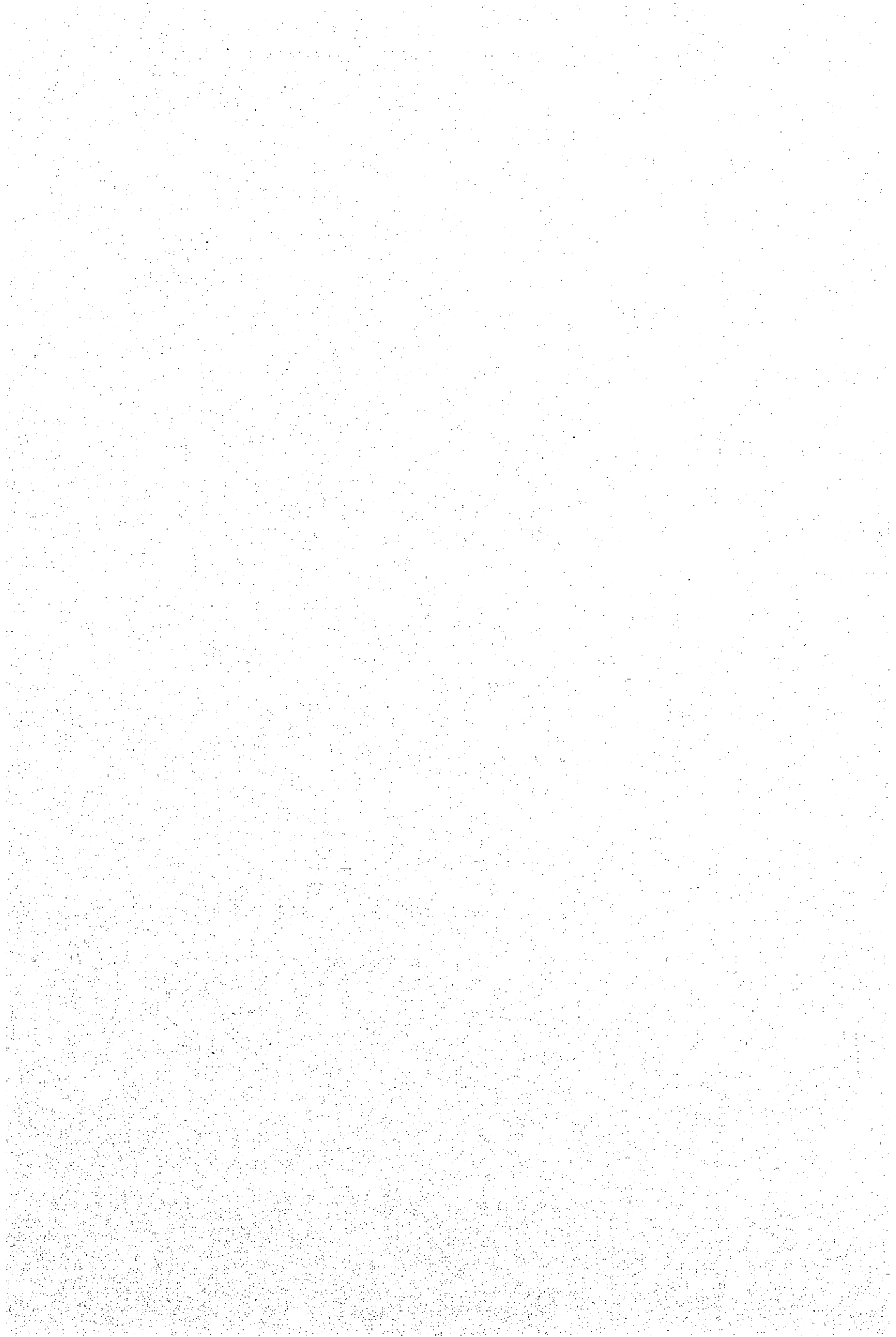
Only preliminary survey on environmental impact and compensation was carried out in the Pre-feasibility Study Stage.

It is required that the more detailed survey and study on natural/social environmental impact and compensation will be carried out on the Feasibility Study Stage.









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