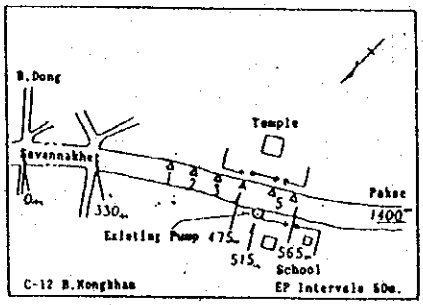
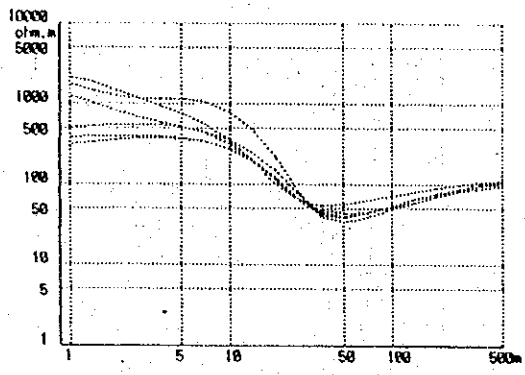


Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

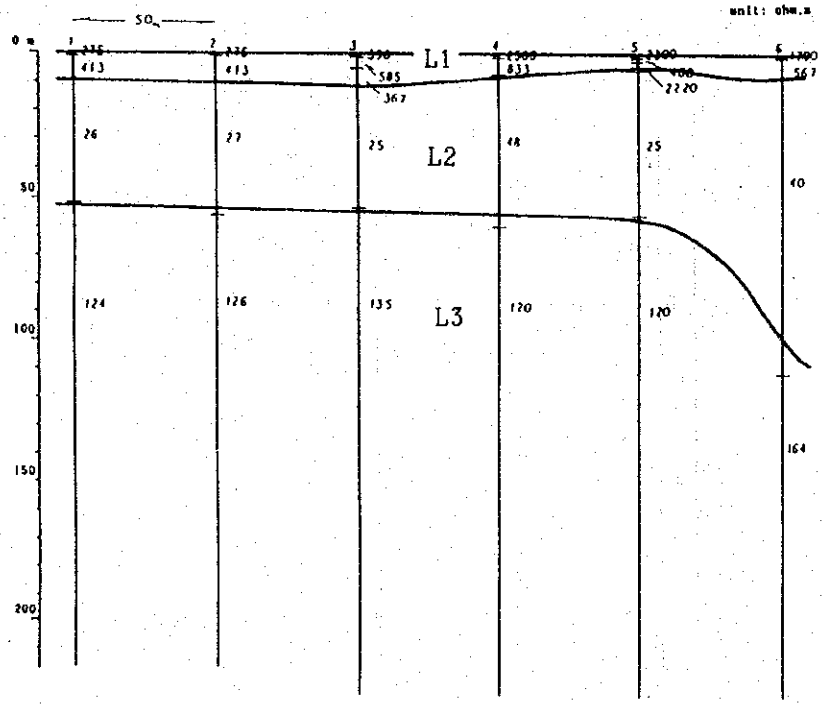
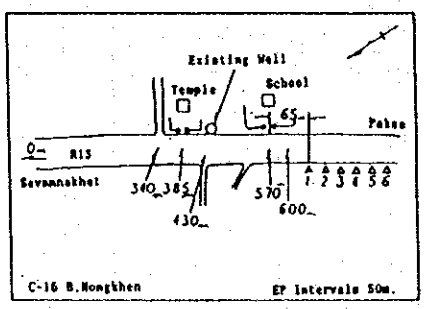
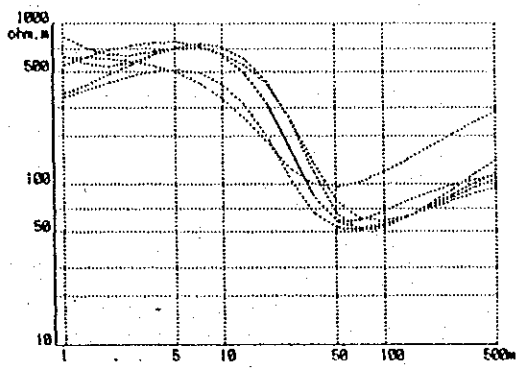


Figure 3.3.2(5/42)	Resistivity Profile C12 B.Nongkham
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

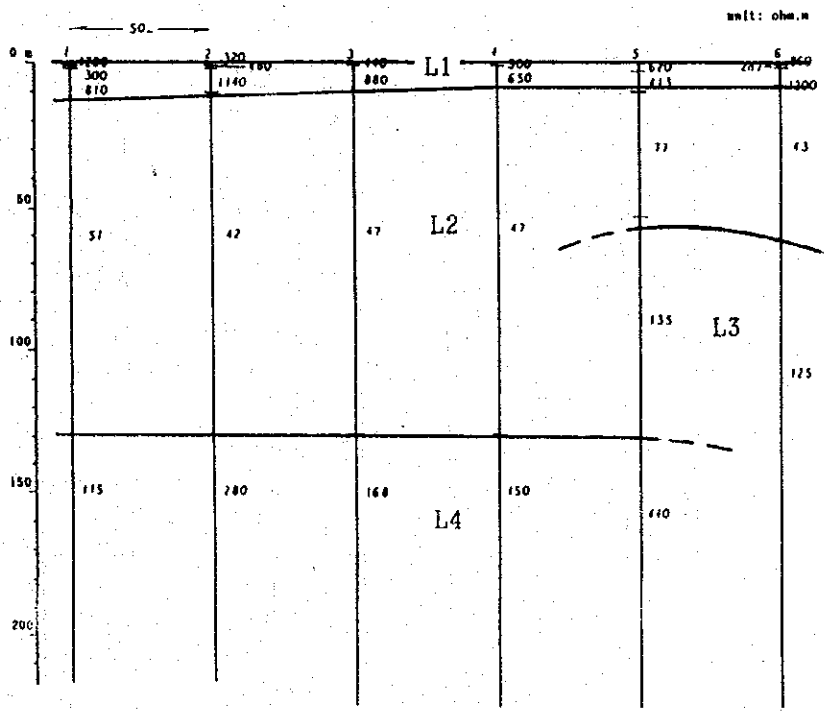
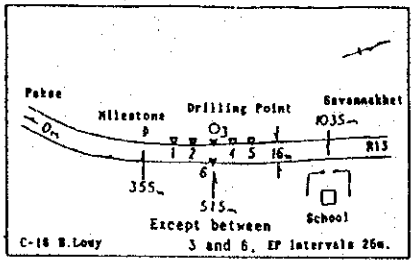
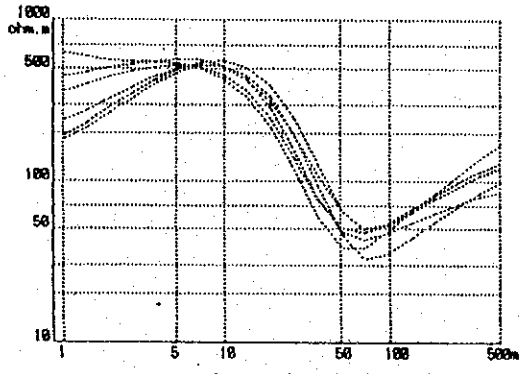


Figure 3.3.2(6/42)	Resistivity Profile C15 B.Nongkhen
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

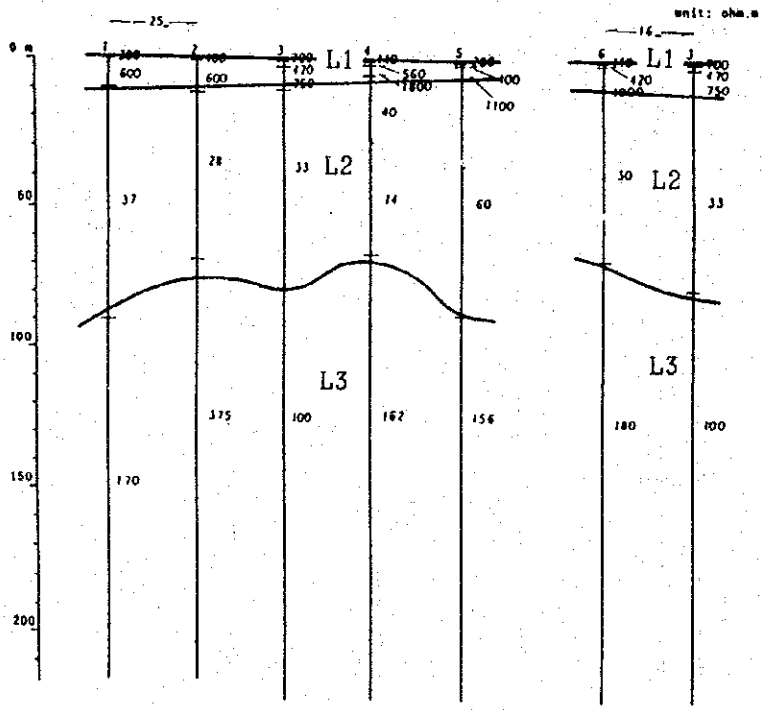
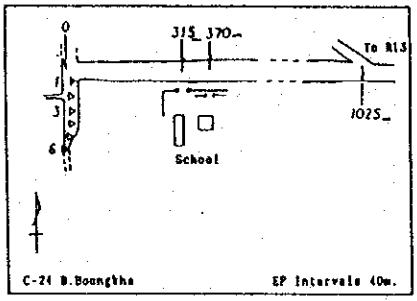


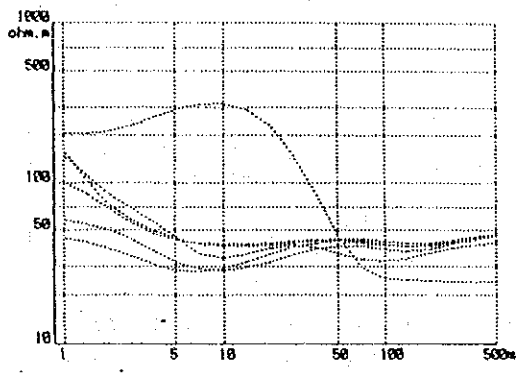
Figure	Resistivity Profile
3.3.2(7/42)	C16 B.Louy

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

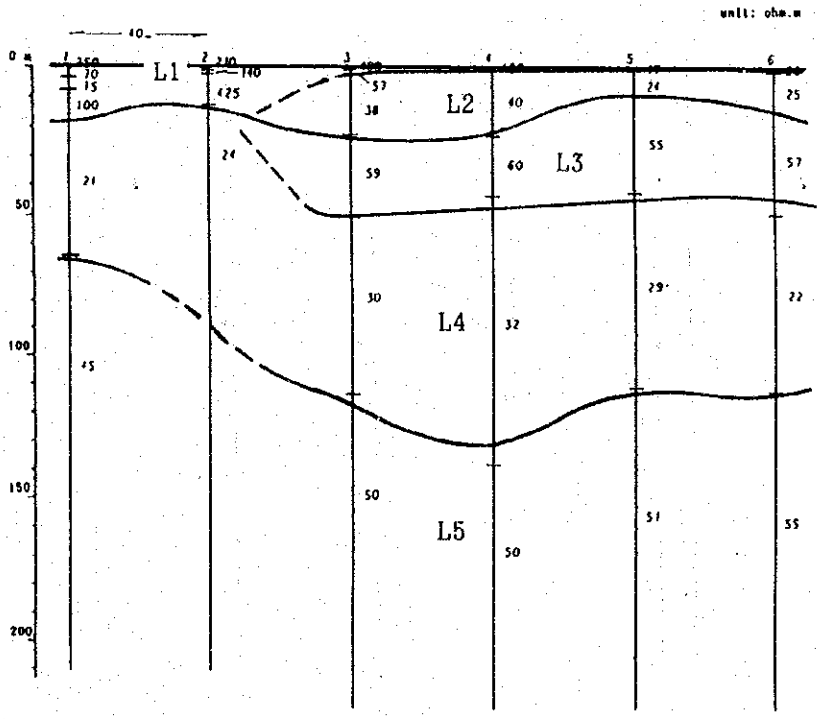
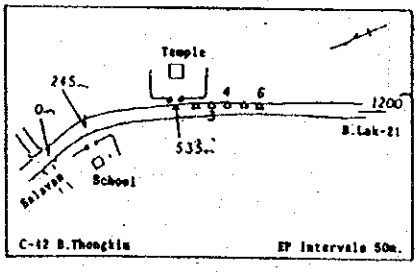
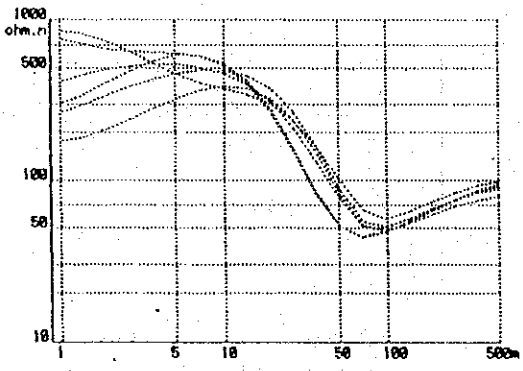


Figure 3.3.2(8/42)	Resistivity Profile C24 B.Boungkha
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANT S.INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

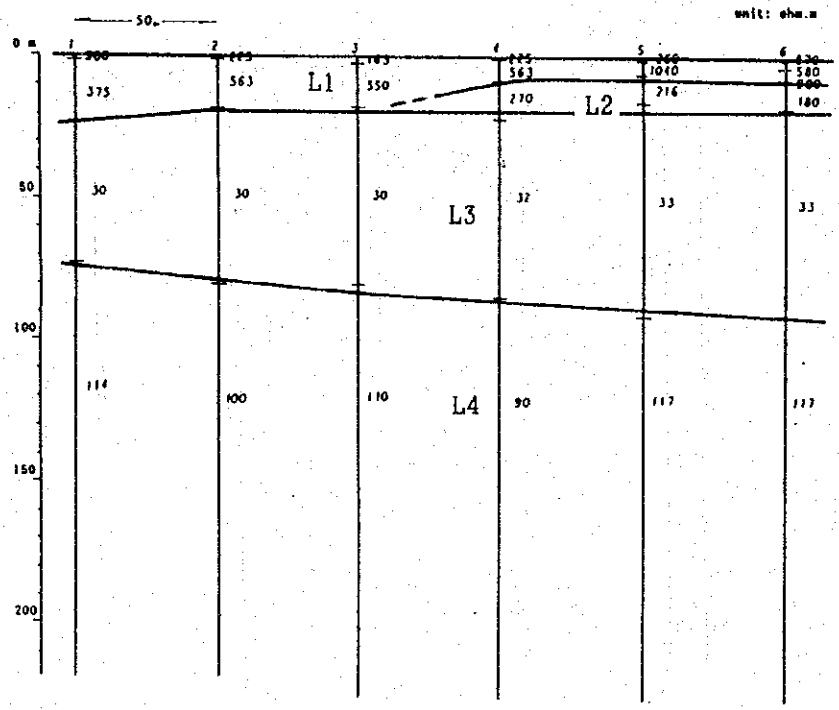
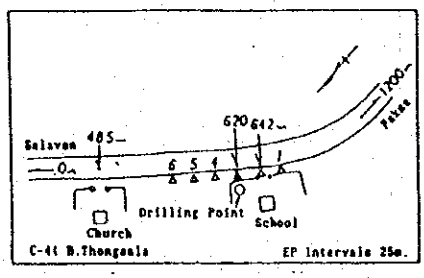
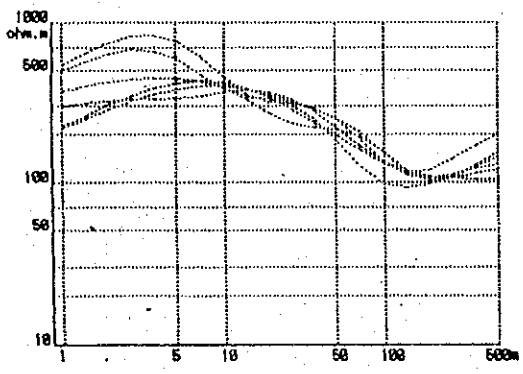


Figure 3.3.2(9/42)	Resistivity Profile C42 B.Thongkim
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

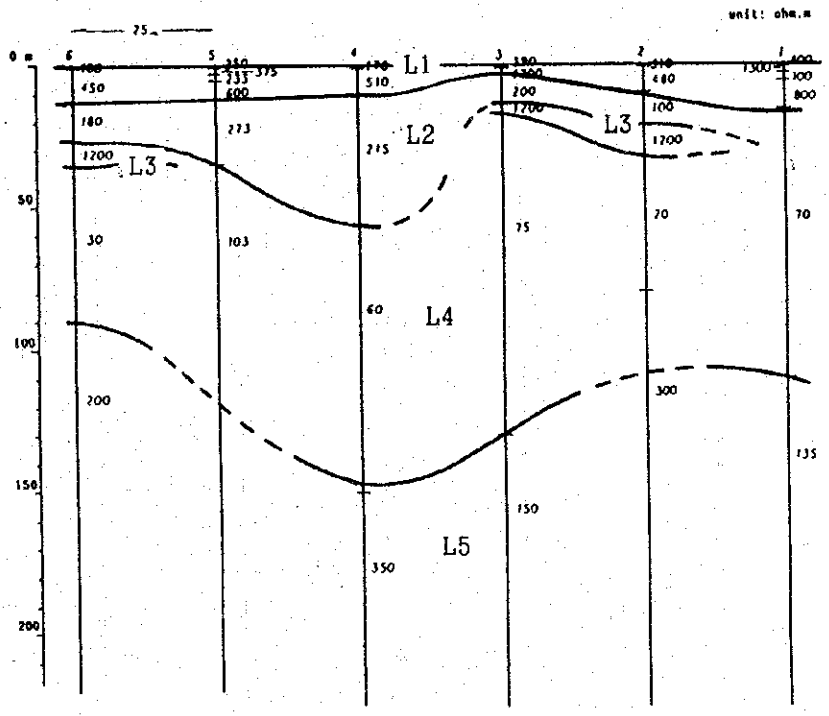
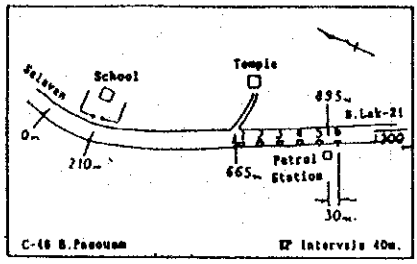
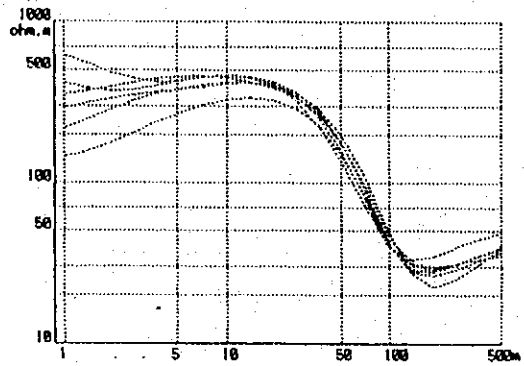


Figure 3.3.2(10/42)	Resistivity Profile C44 B.Thongsala
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

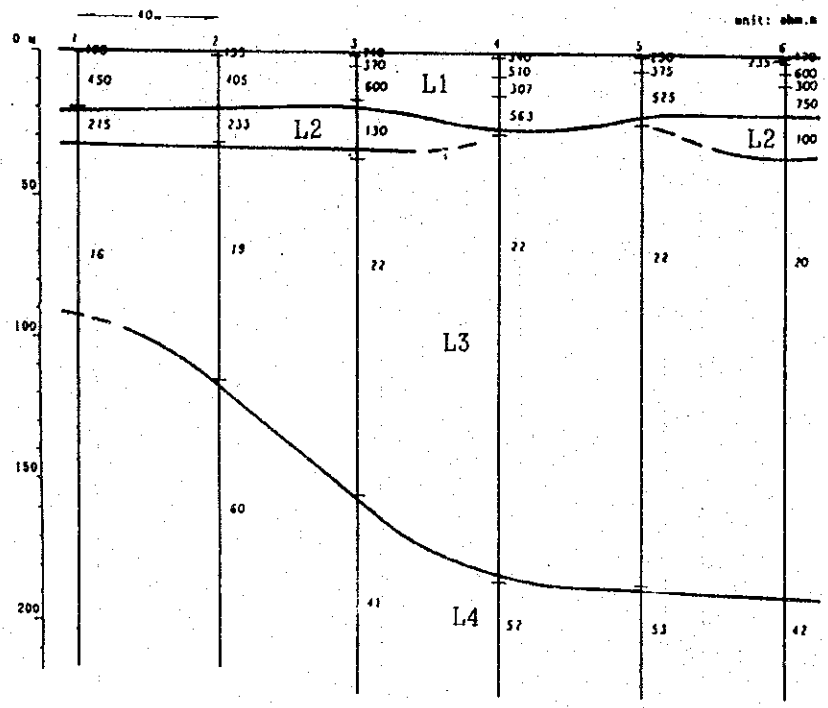
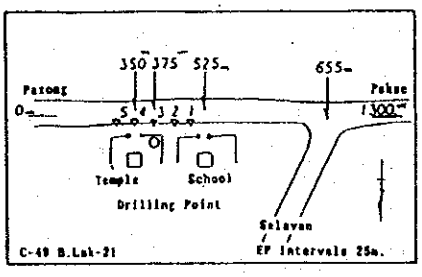
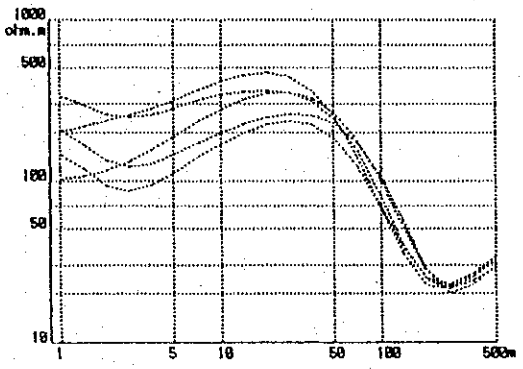


Figure 3.3.2(11/42)	Resistivity Profile C48 B.Pasouam
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

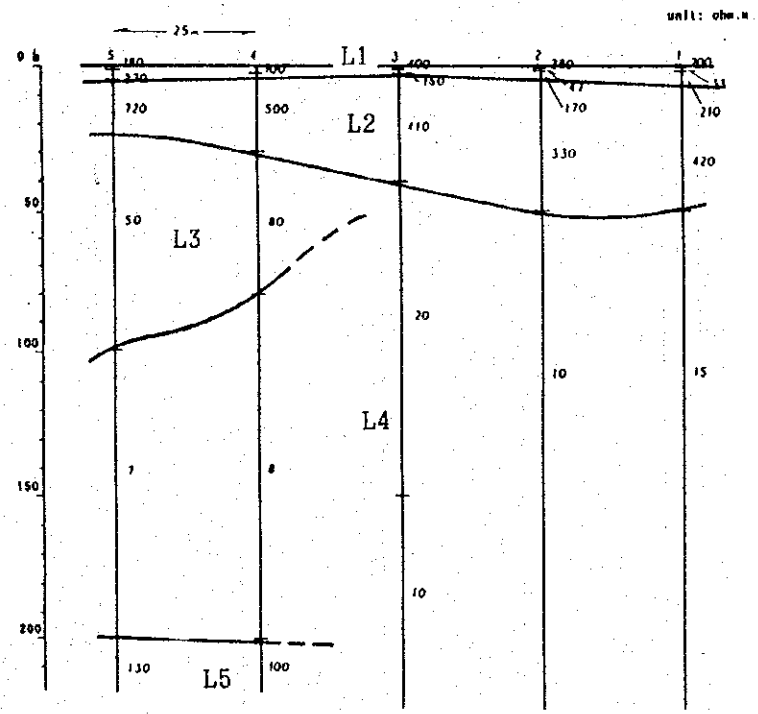
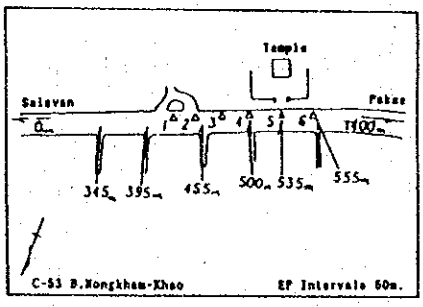
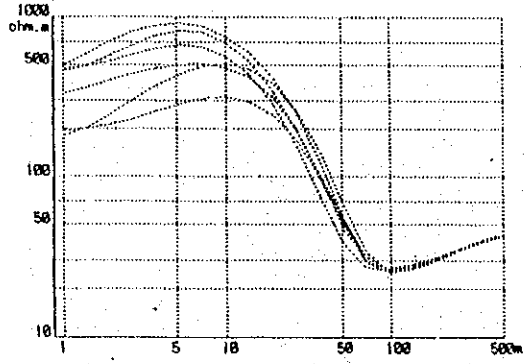


Figure 3.3.2(12/42)	Resistivity Profile C49 B.Lak-21
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

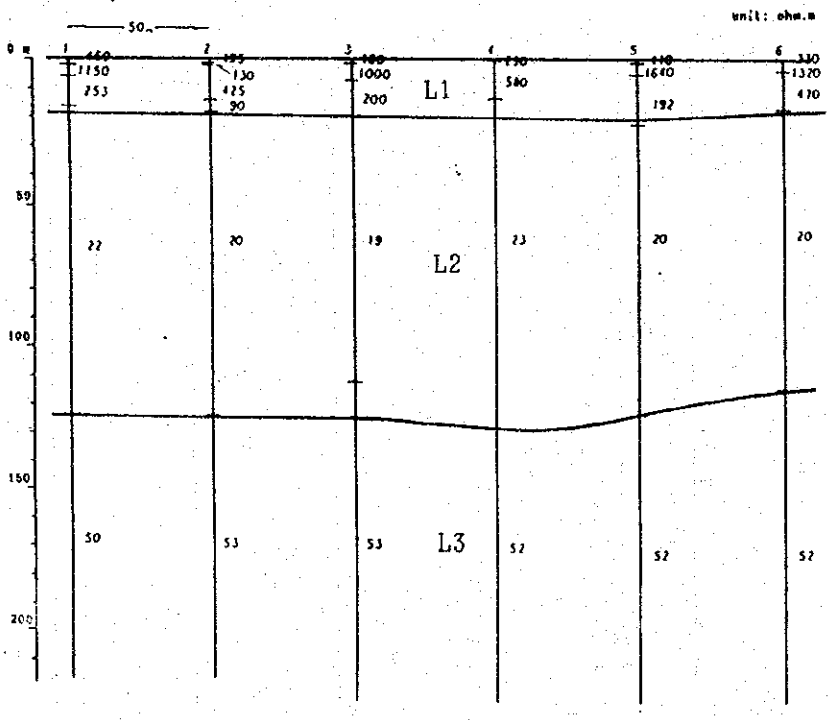
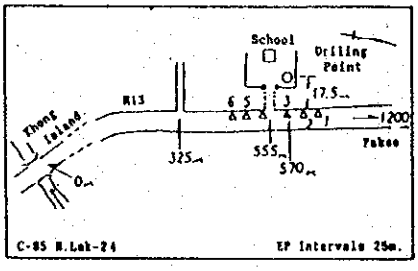
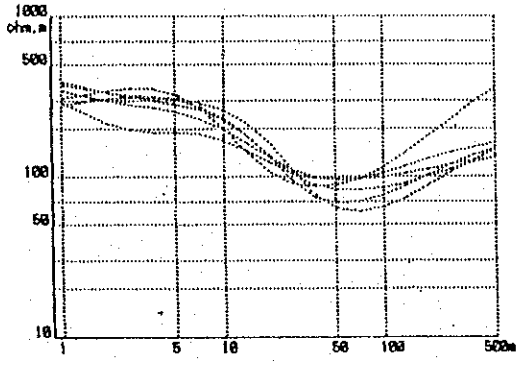


Figure 3.3.2(13/42)	Resistivity Profile C53 B.Nongkham-Khao
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

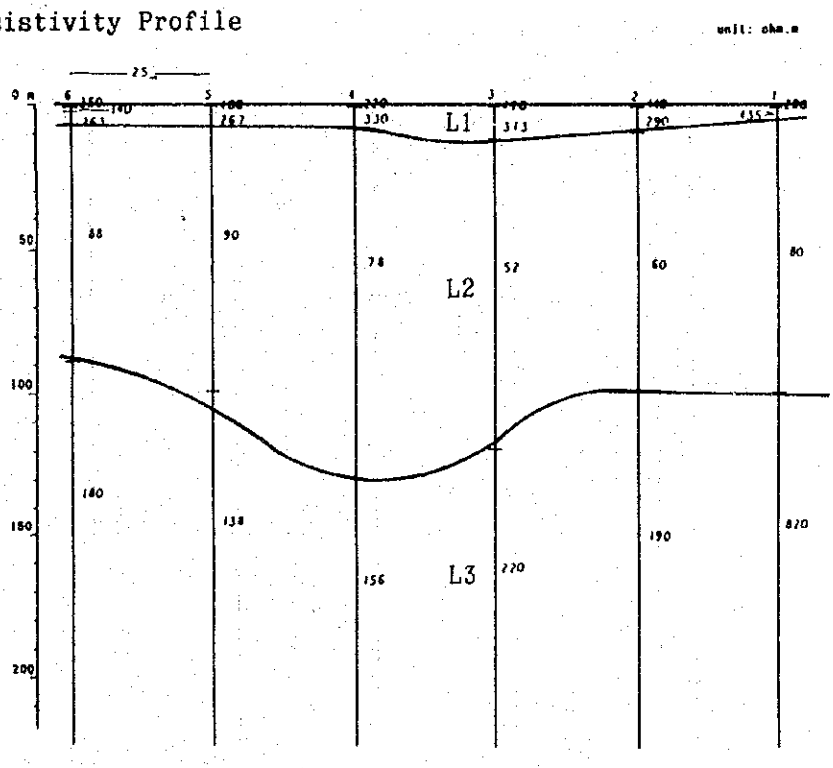
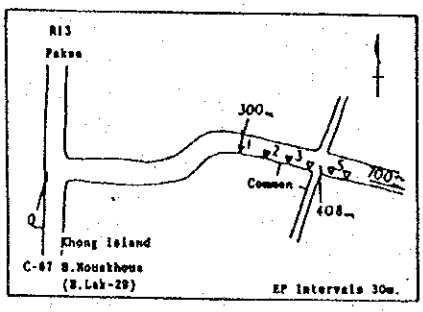
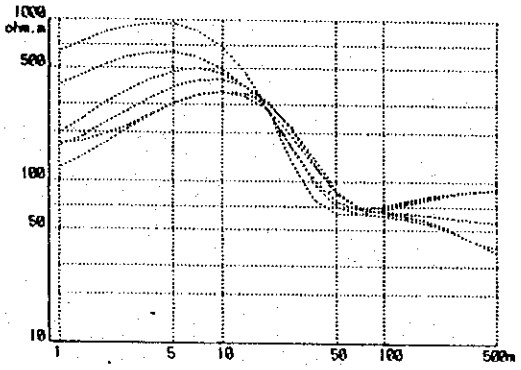


Figure 3.3.2(14/42)	Resistivity Profile C65 B.Lak-24
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

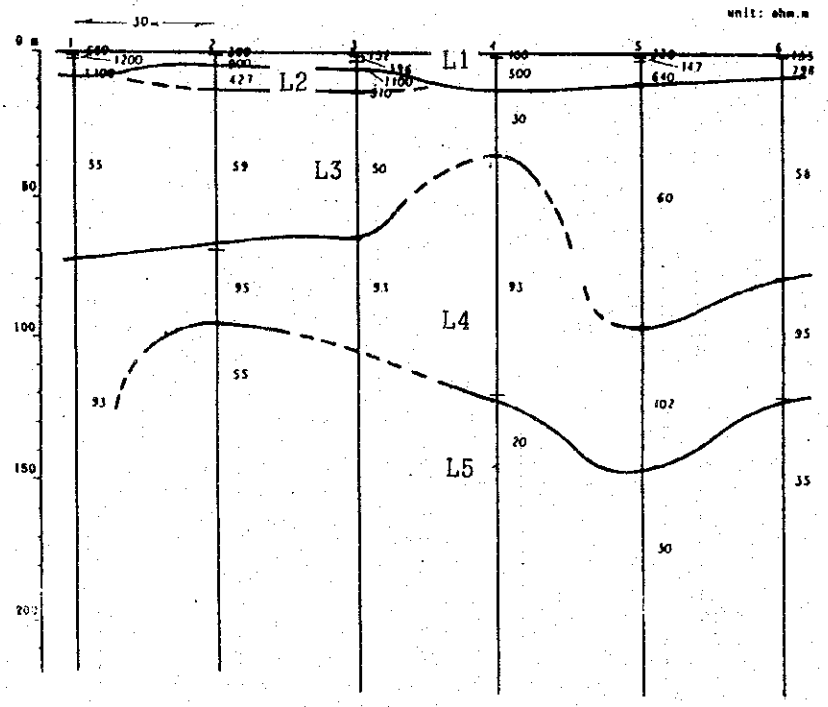
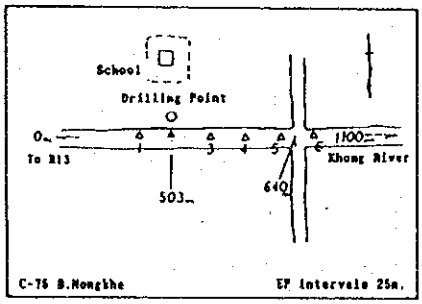
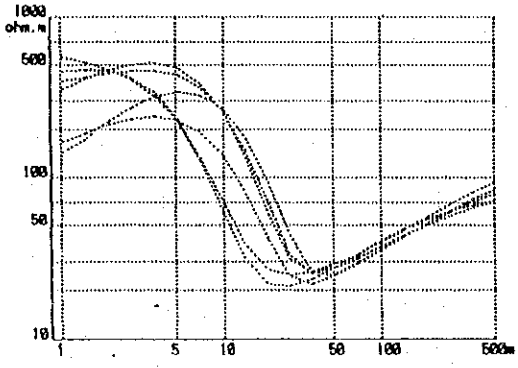


Figure 3.3.2(15/42)	Resistivity Profile C67 B.Houakhoua(Lak-29)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

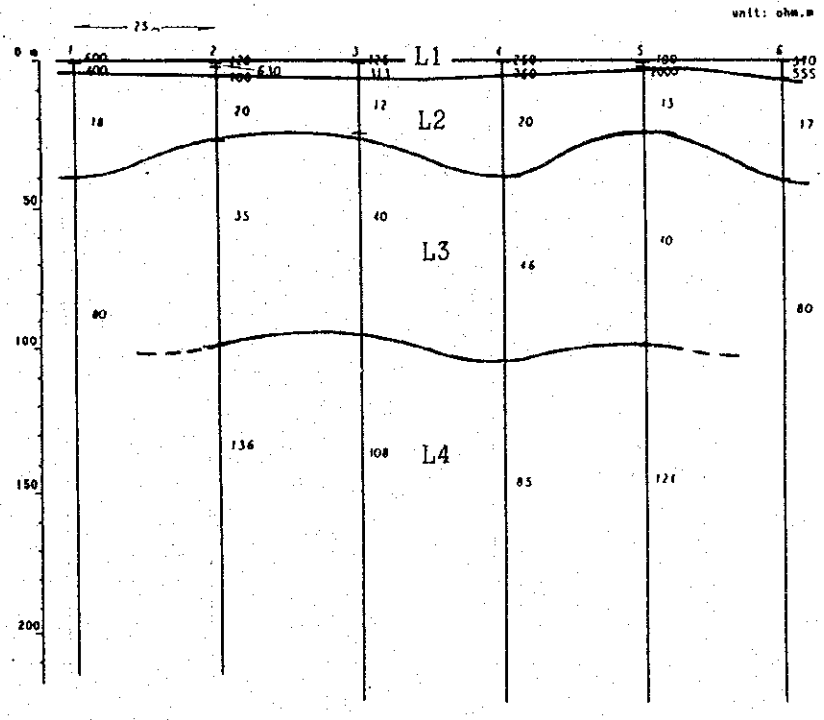
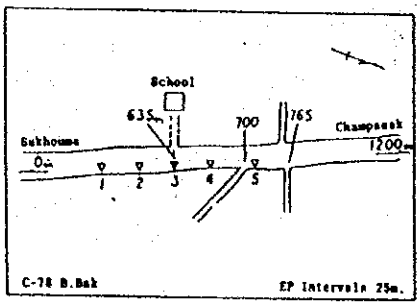
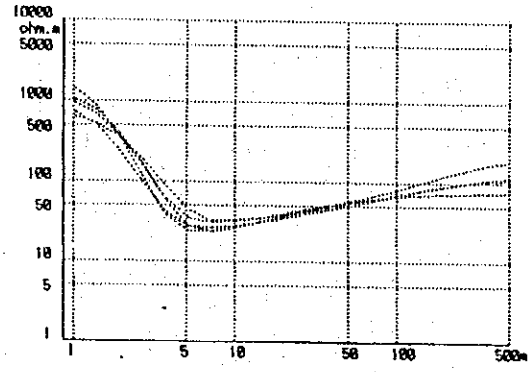


Figure 3.3.2(16/42)	Resistivity Profile C75 B.Nongkhe
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

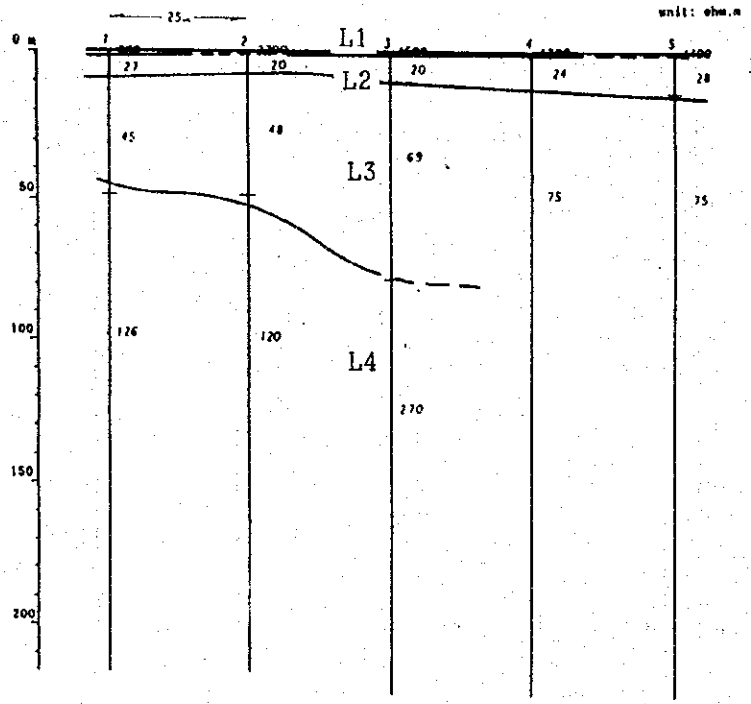
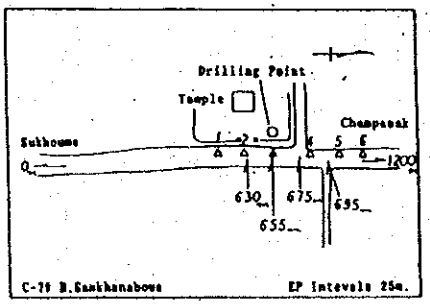
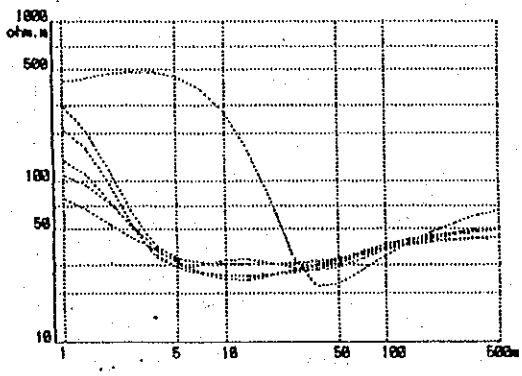


Figure 3.3.2(17/42)	Resistivity Profile C78 B.Bak
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

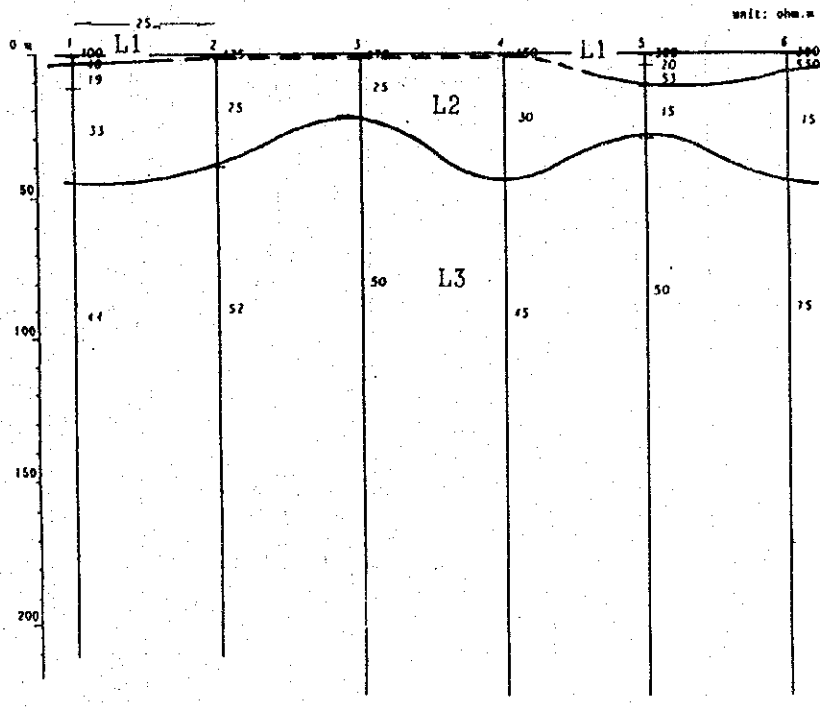
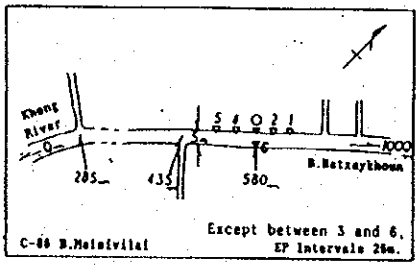
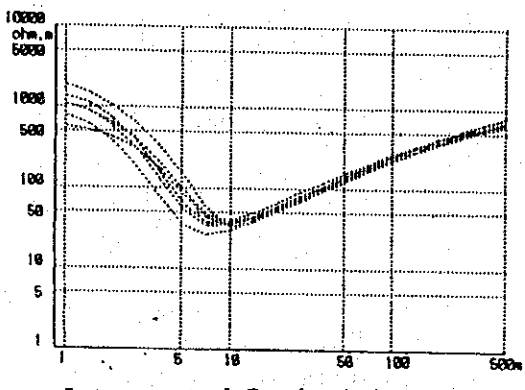


Figure 3.3.2(18/42)	Resistivity Profile C79 B.Samkhanaboua
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

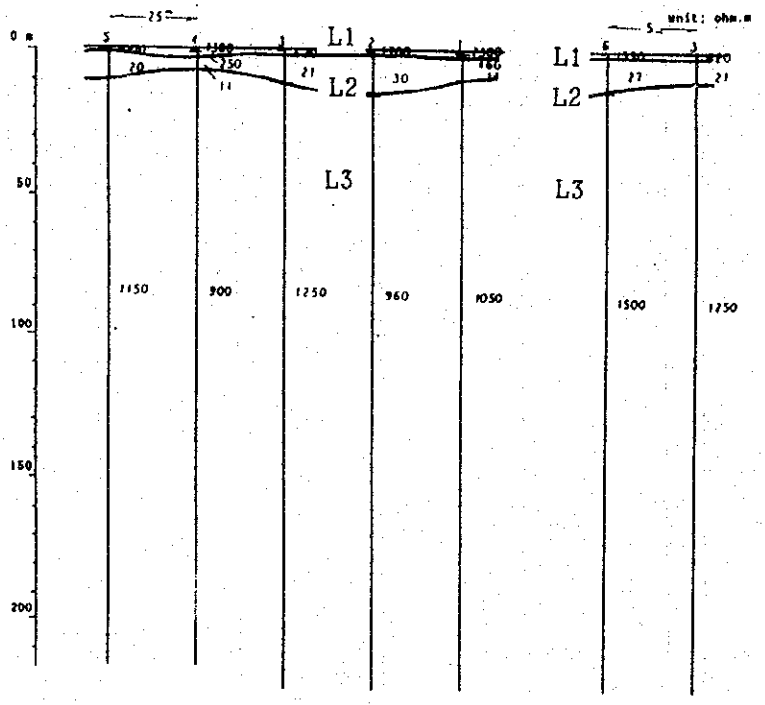
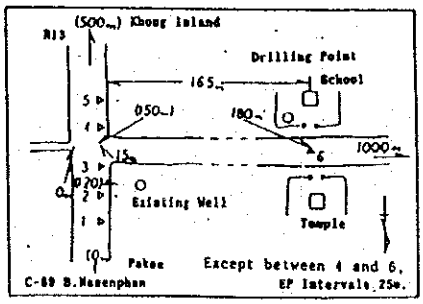
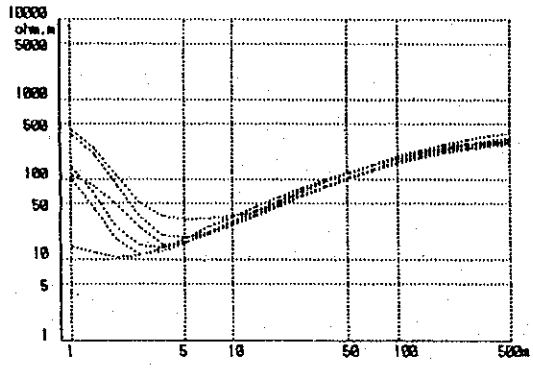


Figure 3.3.2(19/42)	Resistivity Profile C88 B.Maisivalai
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

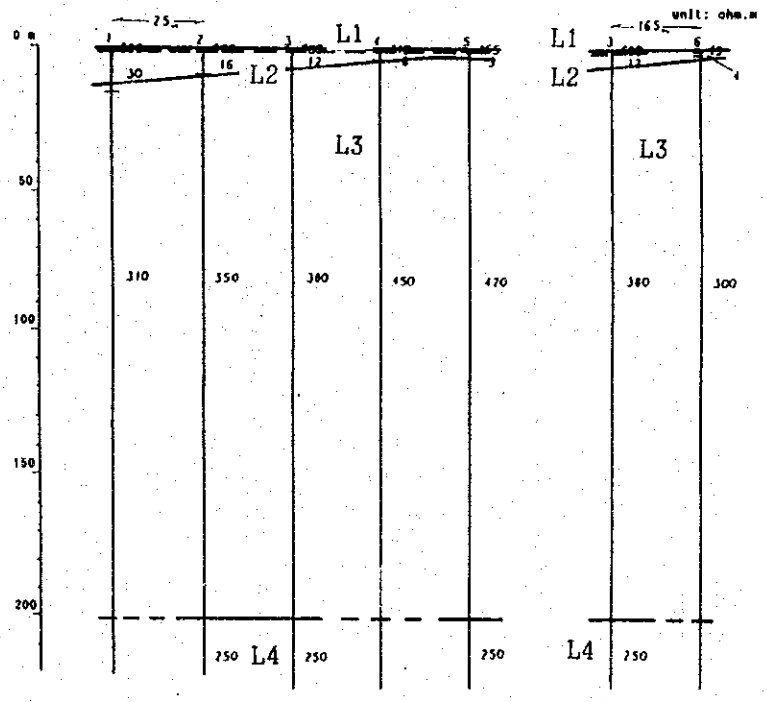
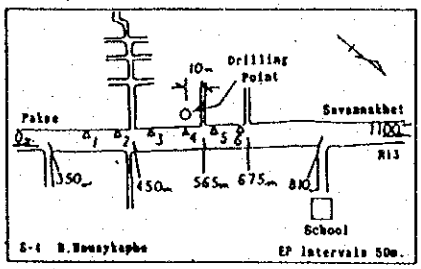
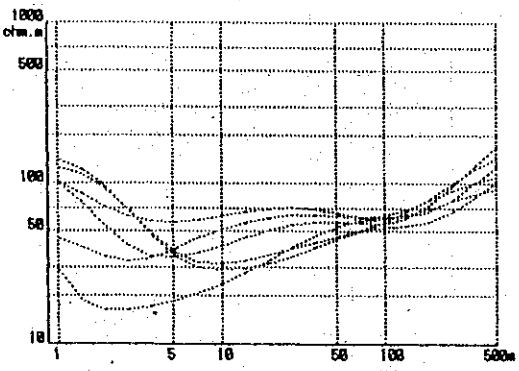


Figure 3.3.2(20/42)	Resistivity Profile C89 B.Nasenphan
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

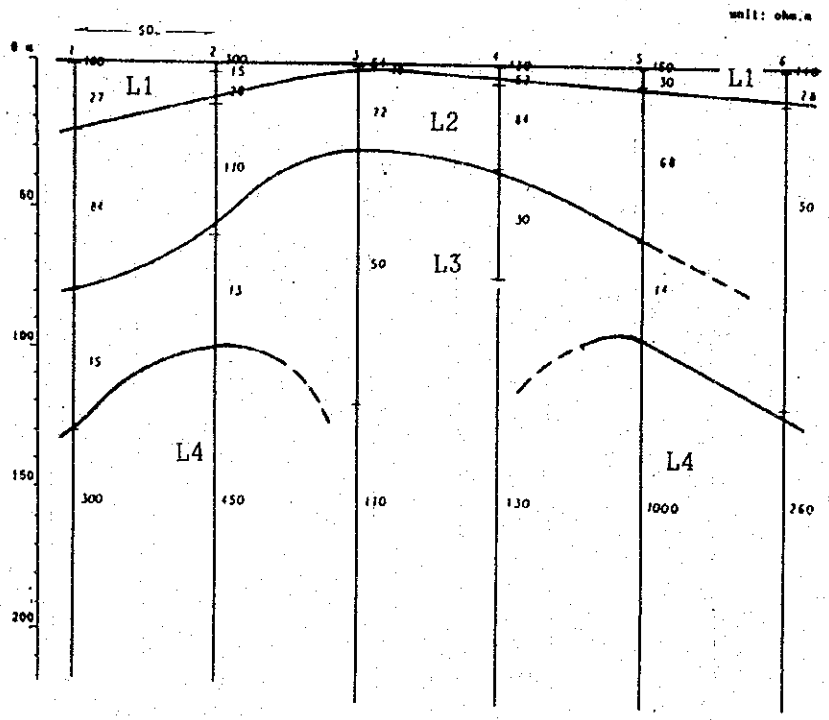
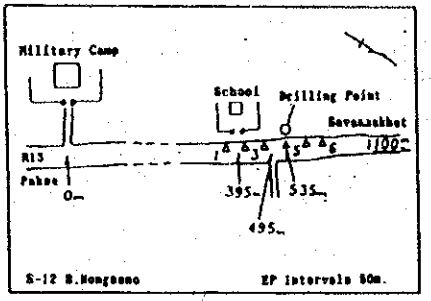
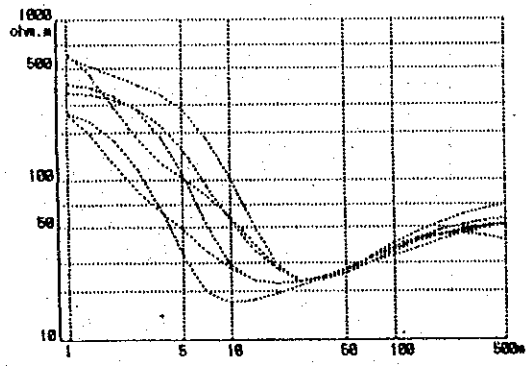


Figure 3.3.2(21/42)	Resistivity Profile S4 B.Houaykapho
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

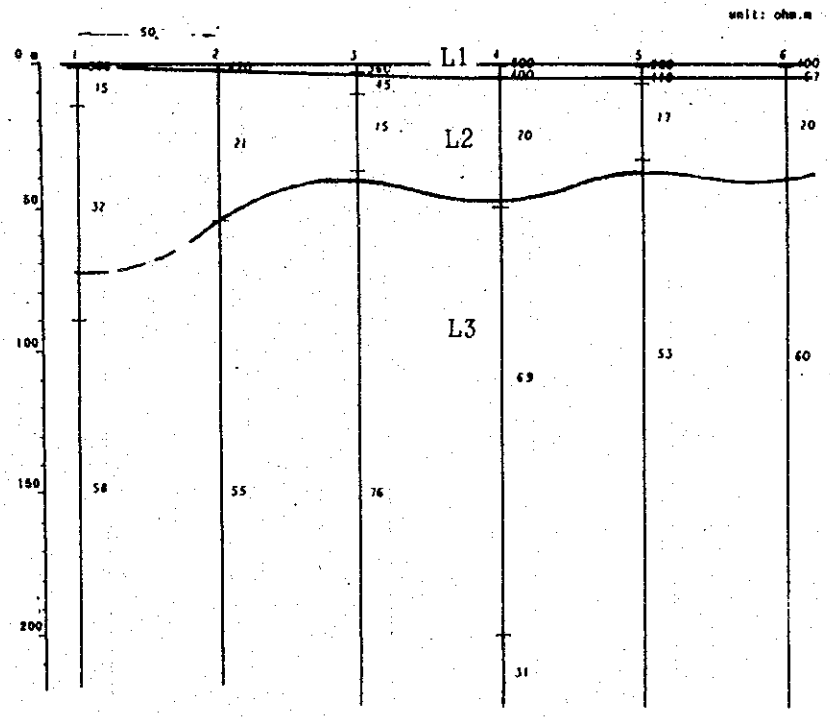
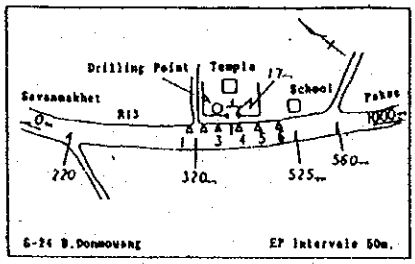
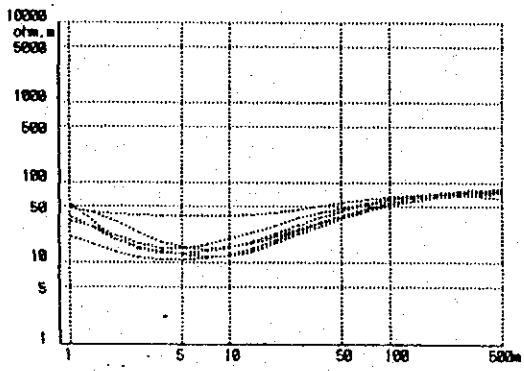


Figure 3.3.2(22/42)	Resistivity Profile S12 B.Nongsano
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

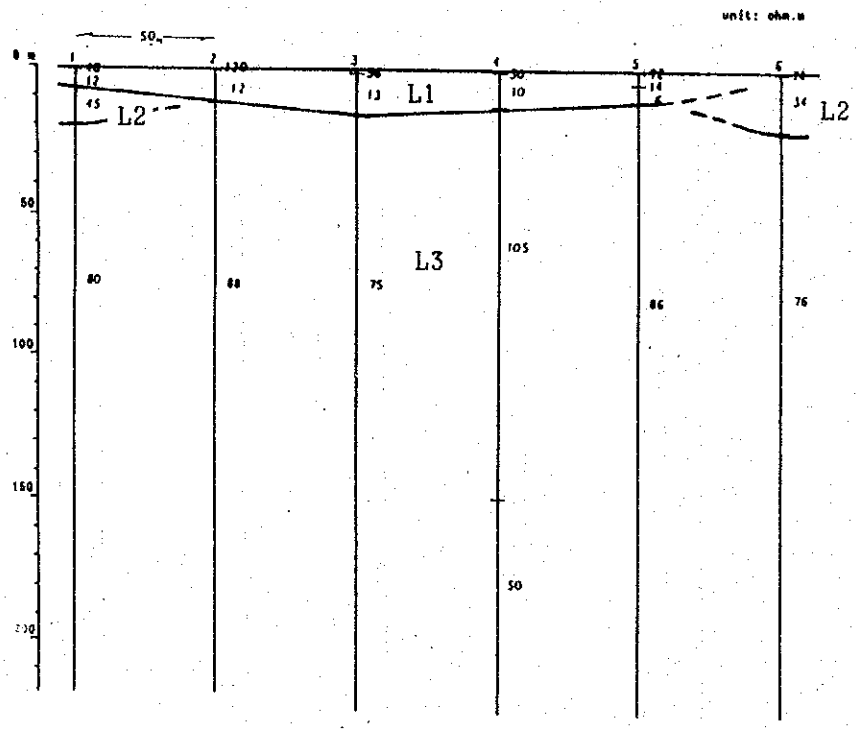
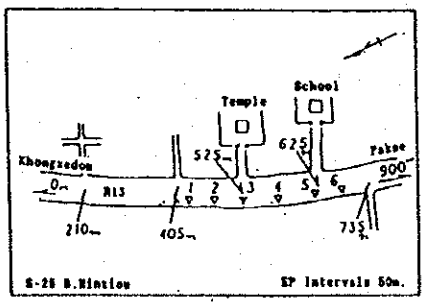
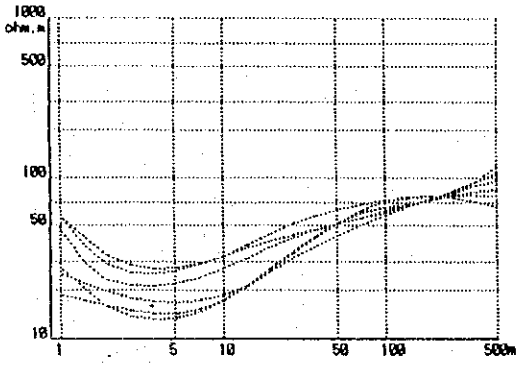


Figure 3.3.2(23/42)	Resistivity Profile S24 B.Donmouang
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

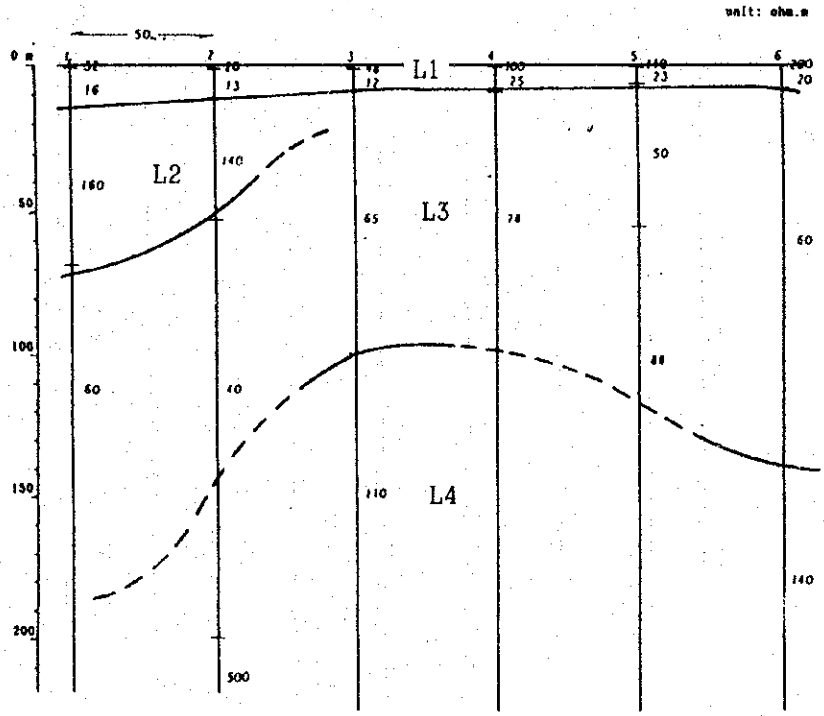
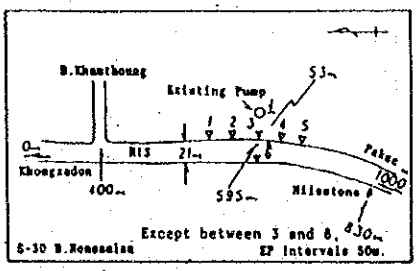
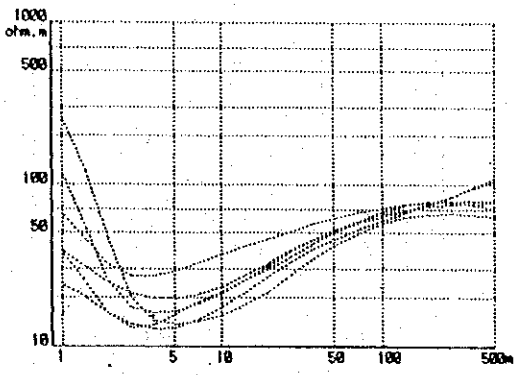


Figure 3.3.2(24/42)	Resistivity Profile S25 B.Hinxiou
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

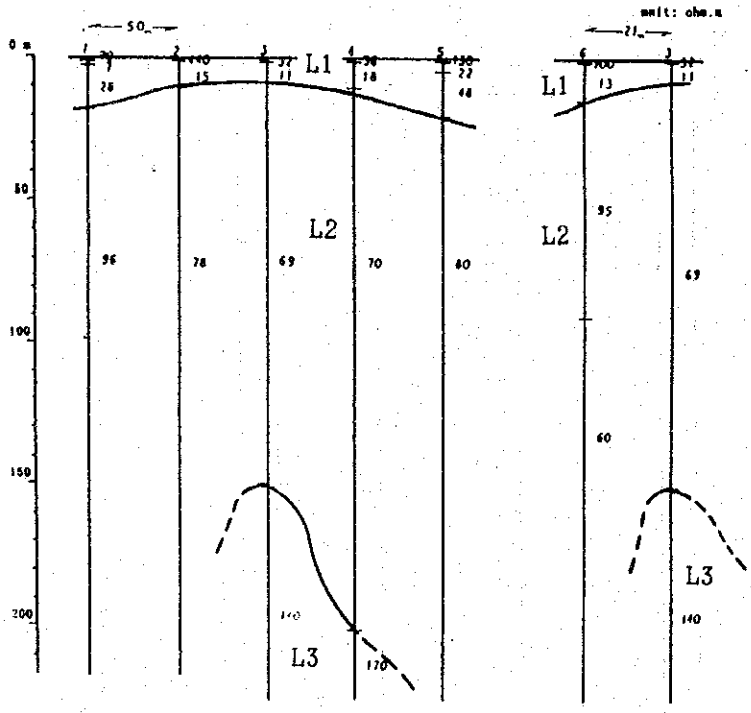
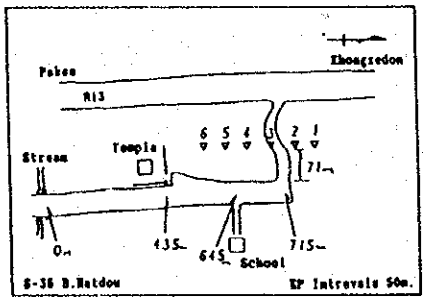
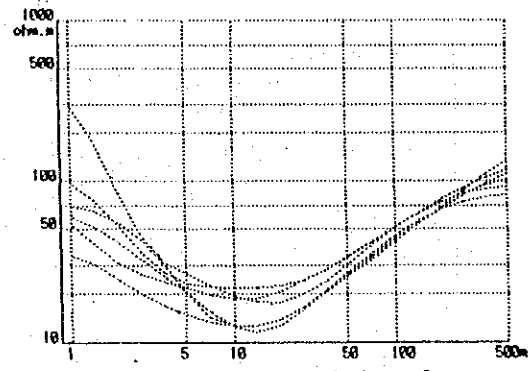


Figure 3.3.2(25/42)	Resistivity Profile S30 B.Nonsamlan
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

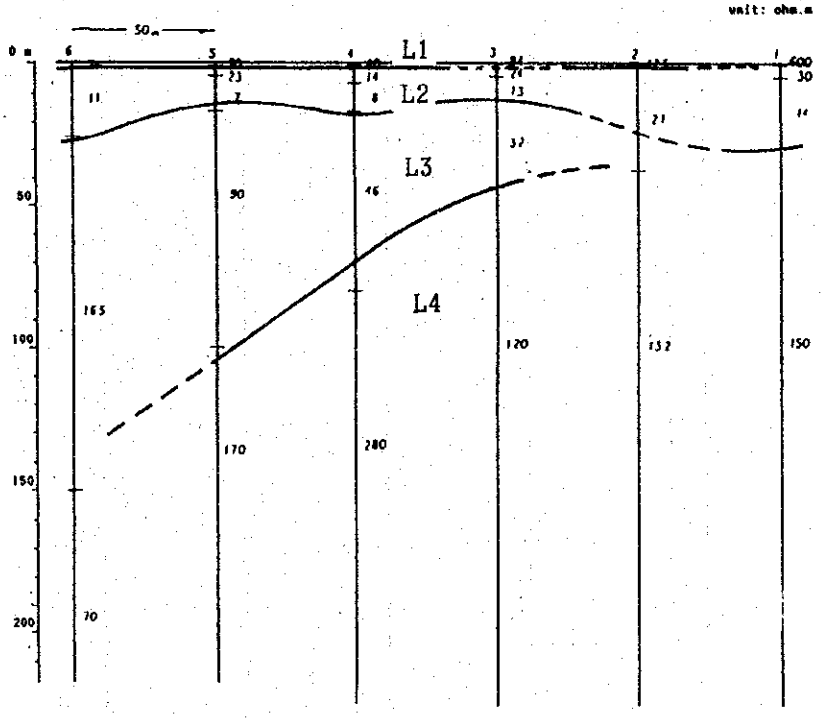
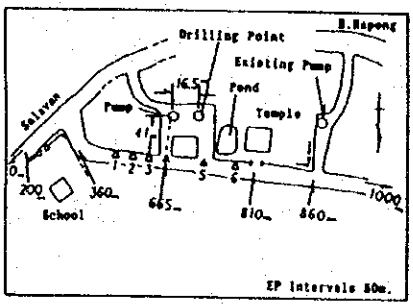
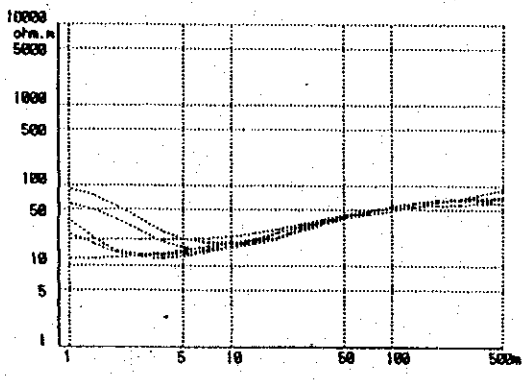


Figure 3.3.2(26/42)	Resistivity Profile S35 B.Hatdou
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

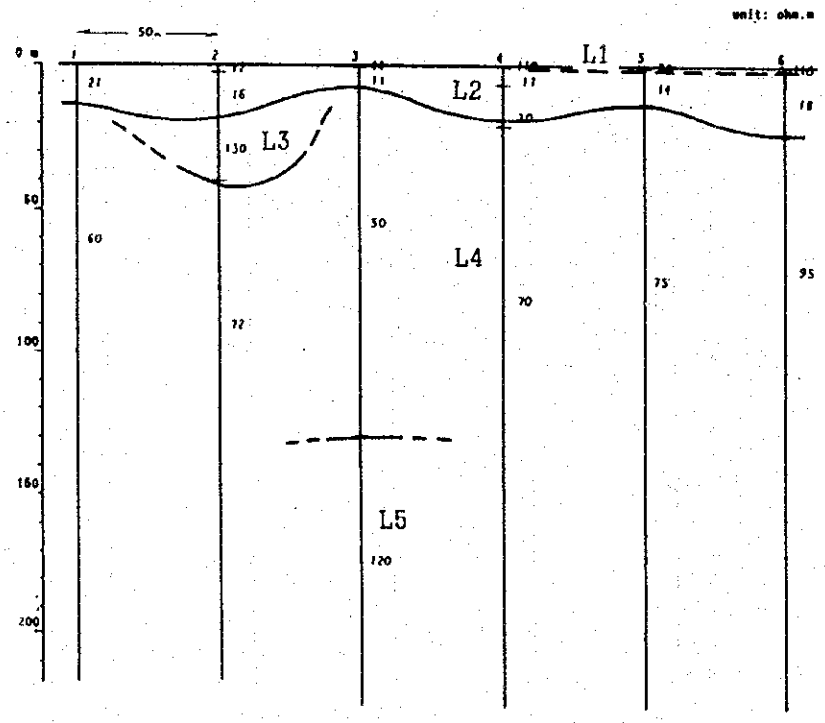
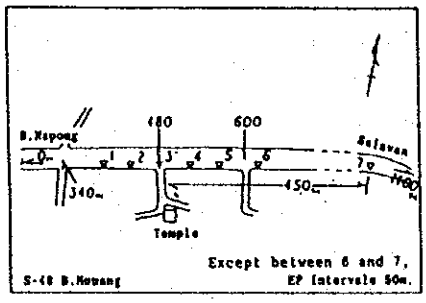
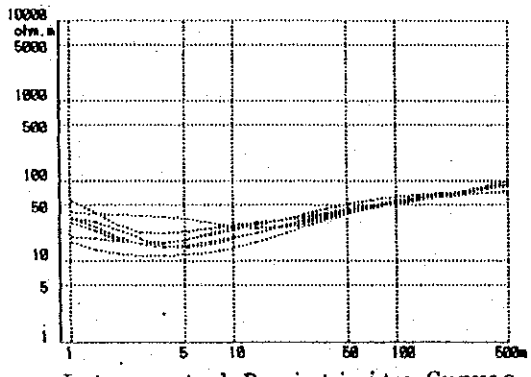


Figure 3.3.2(27/42)	Resistivity Profile S38 B.Kouttabeng
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

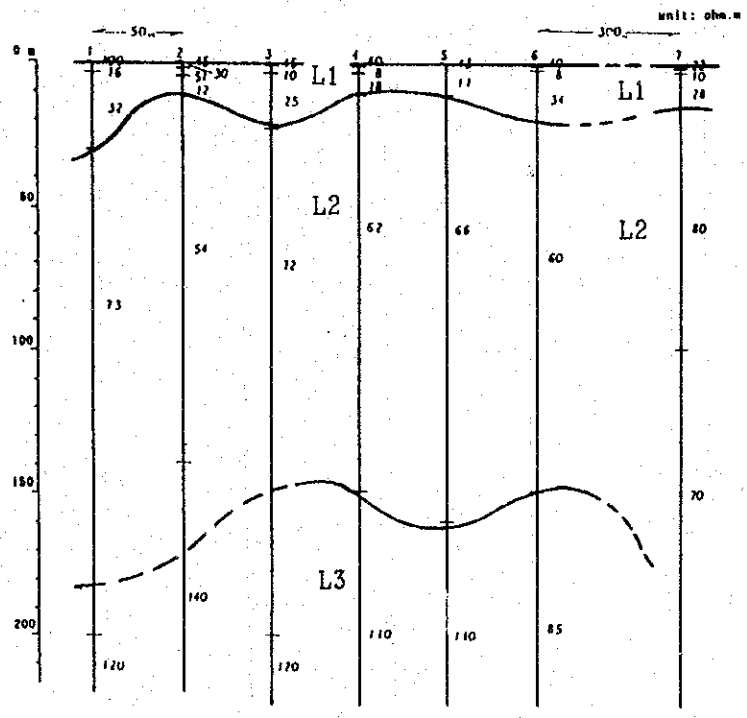
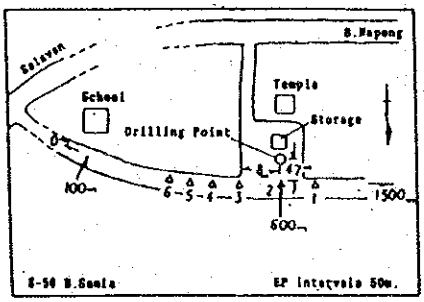
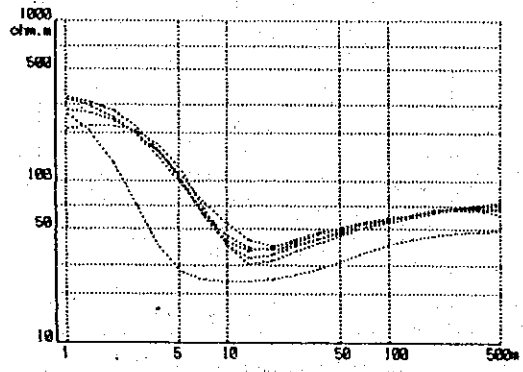


Figure 3.3.2(28/42)	Resistivity Profile S48 B.Mouang
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

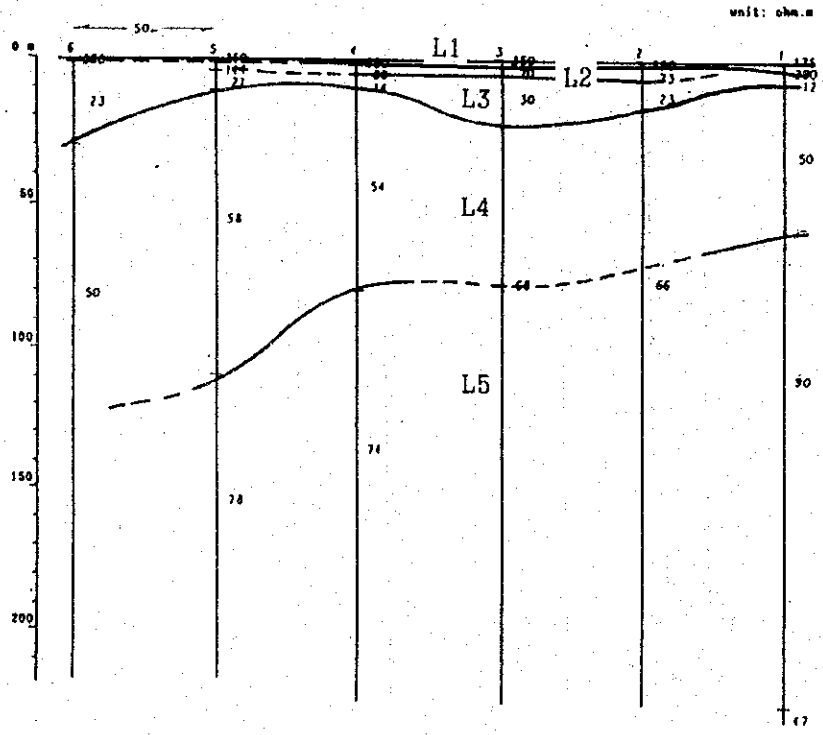
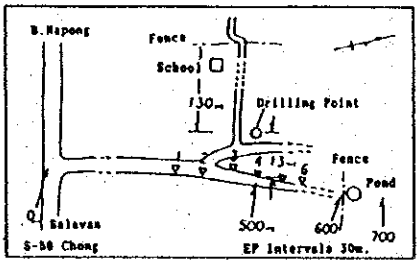
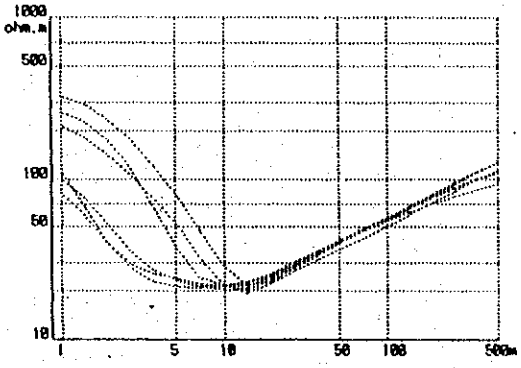


Figure 3.3.2(29/42)	Resistivity Profile S50 B.Samia
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

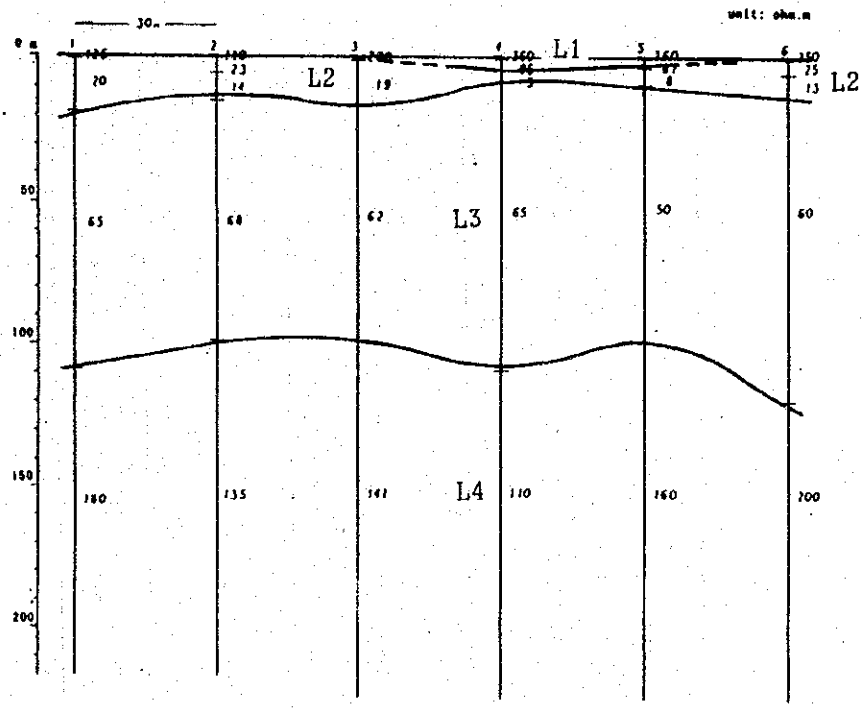
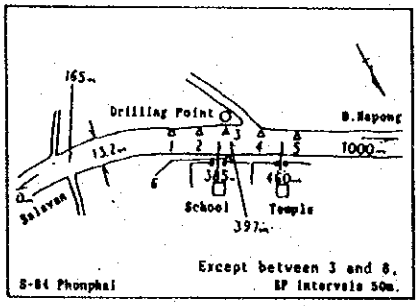
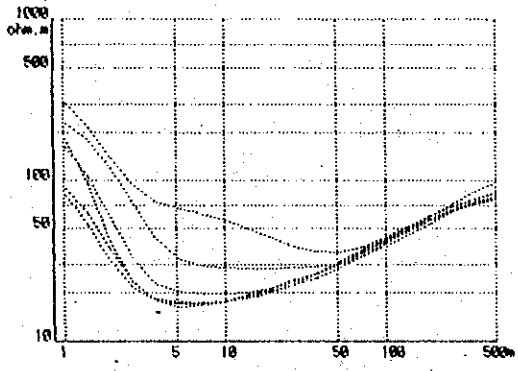


Figure 3.3.2(30/42)	Resistivity Profile S56 B.Chong
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

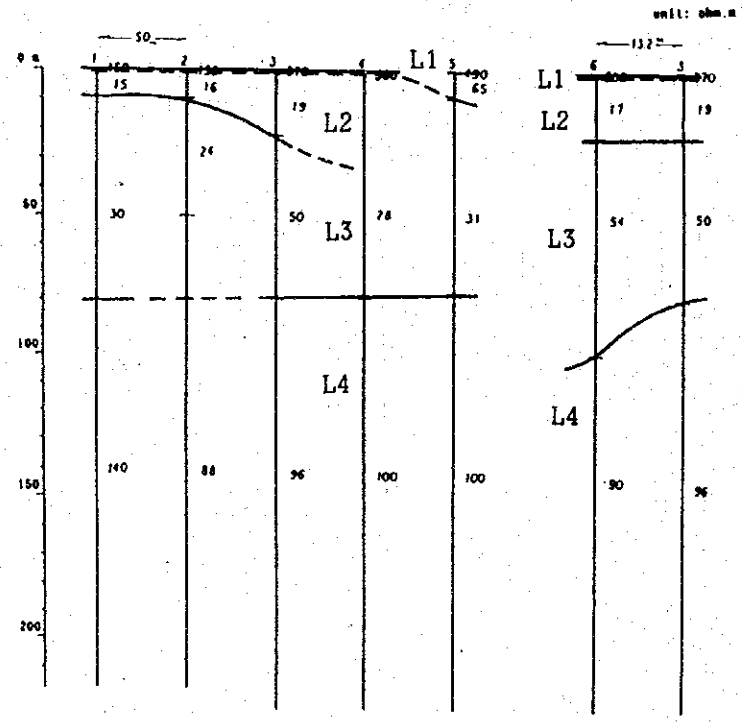
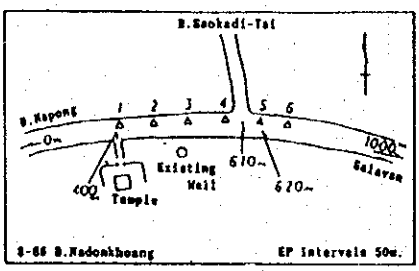
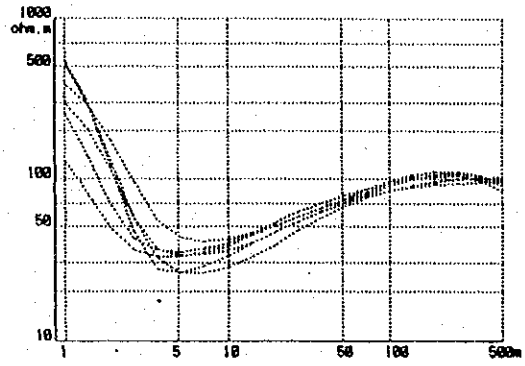


Figure 3.3.2(31/42)	Resistivity Profile S64 B.Phonphai
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

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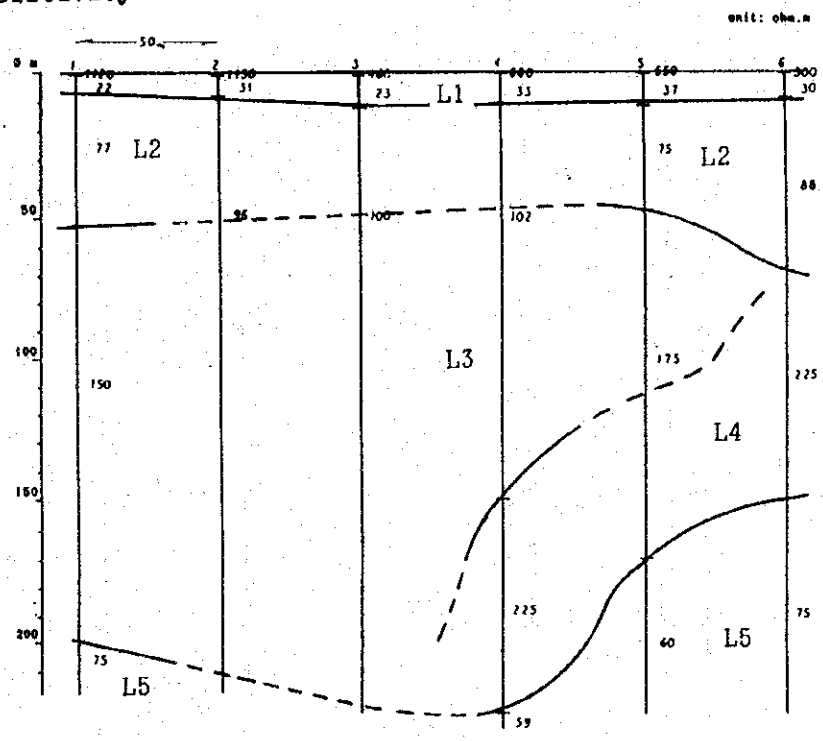
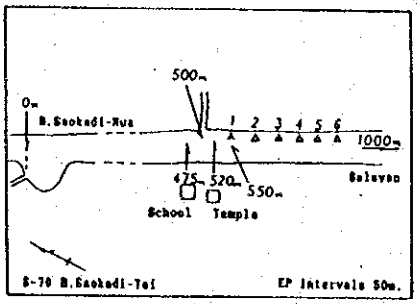
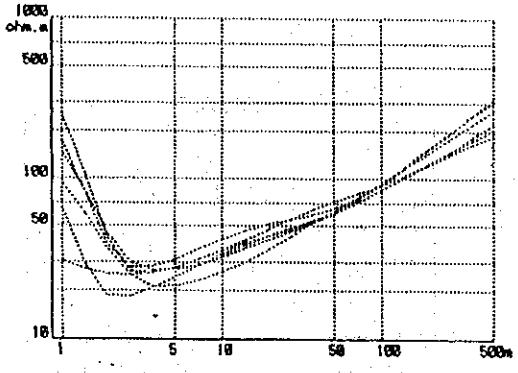


Figure 3.3.2(32/42)	Resistivity Profile S66 B.Nadonkhoang
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

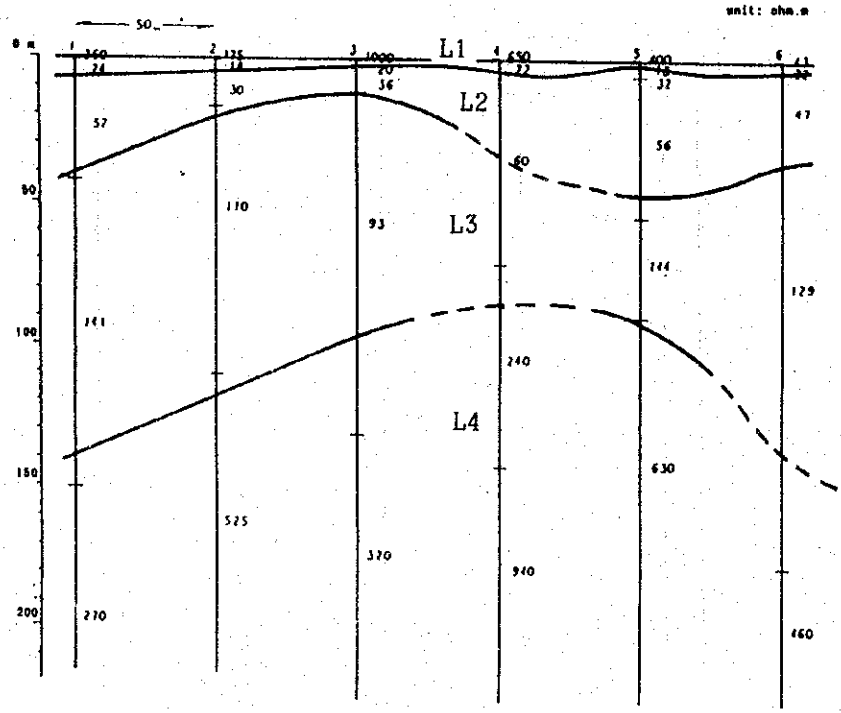
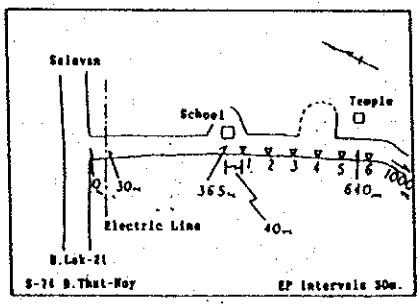
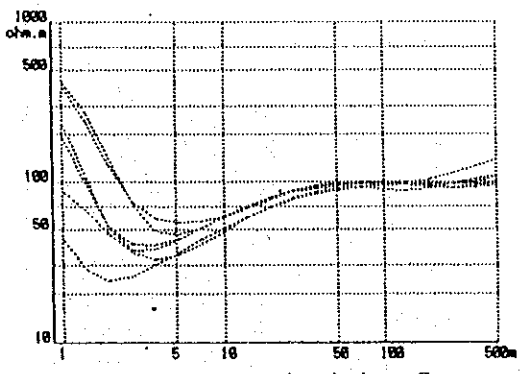


Figure 3.3.2(33/42)	Resistivity Profile S70 B.Saokadi-Tai
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

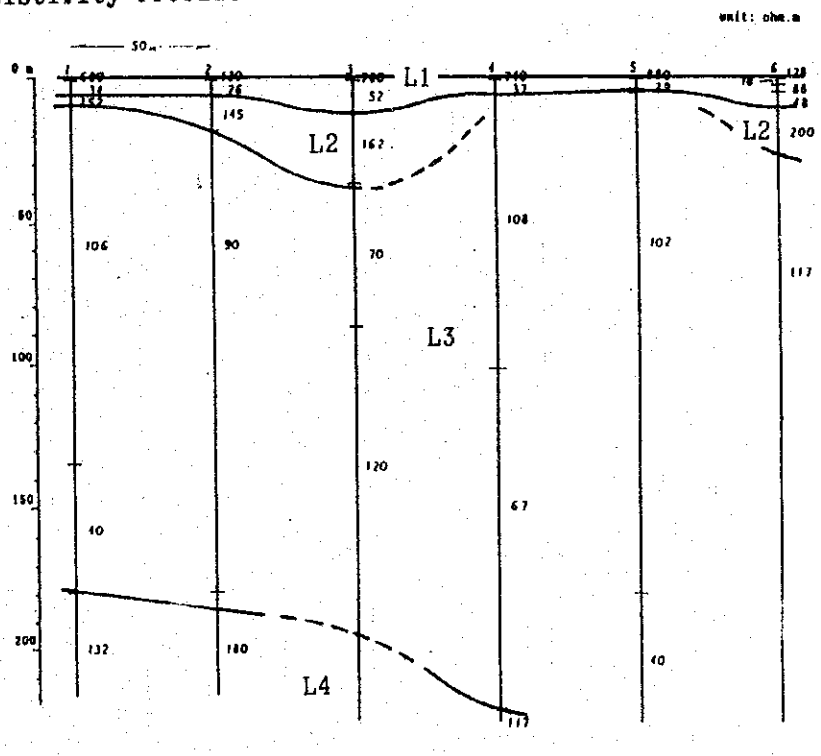
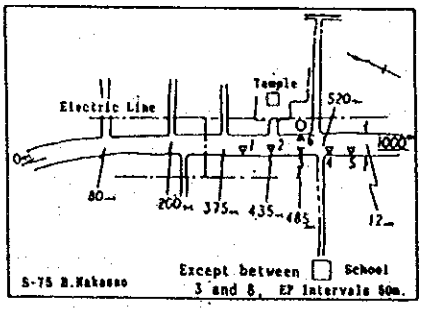
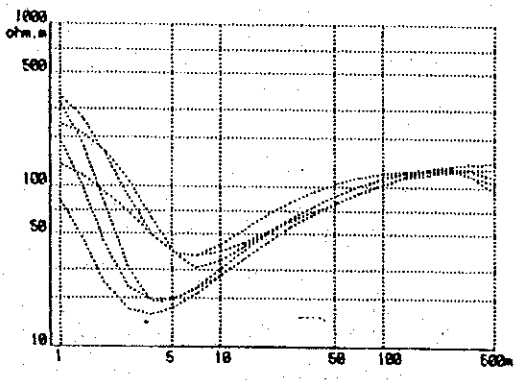


Figure 3.3.2(34/42)	Resistivity Profile S74 B.That-Noy
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

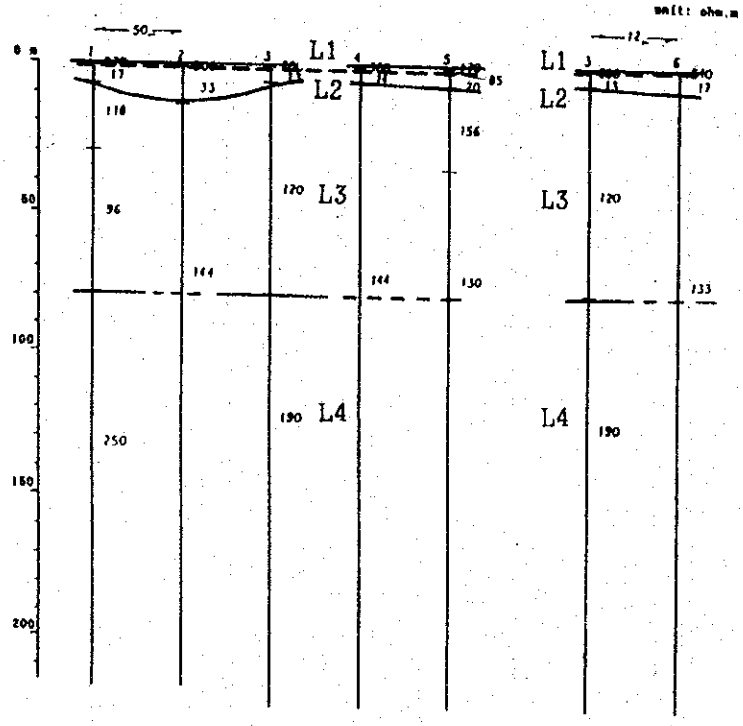
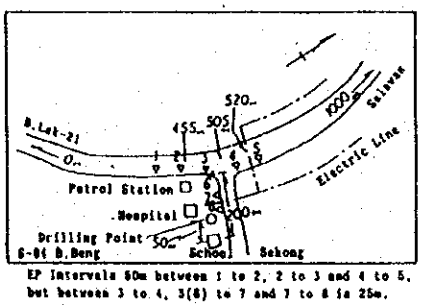
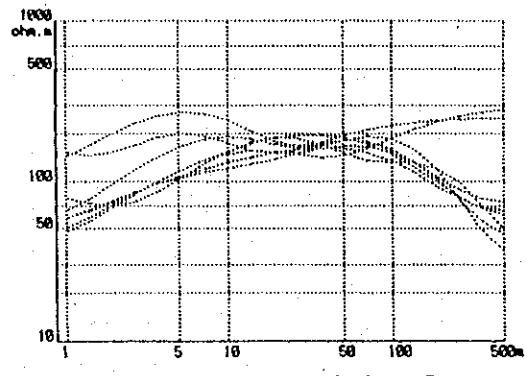


Figure 3.3.2(35/42)	Resistivity Profile S75 B.Nakasao
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



EP Intervals 50m between 1 to 2, 2 to 3 and 4 to 5, but between 3 to 4, 3(6) to 7 and 7 to 8 is 25m.

Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

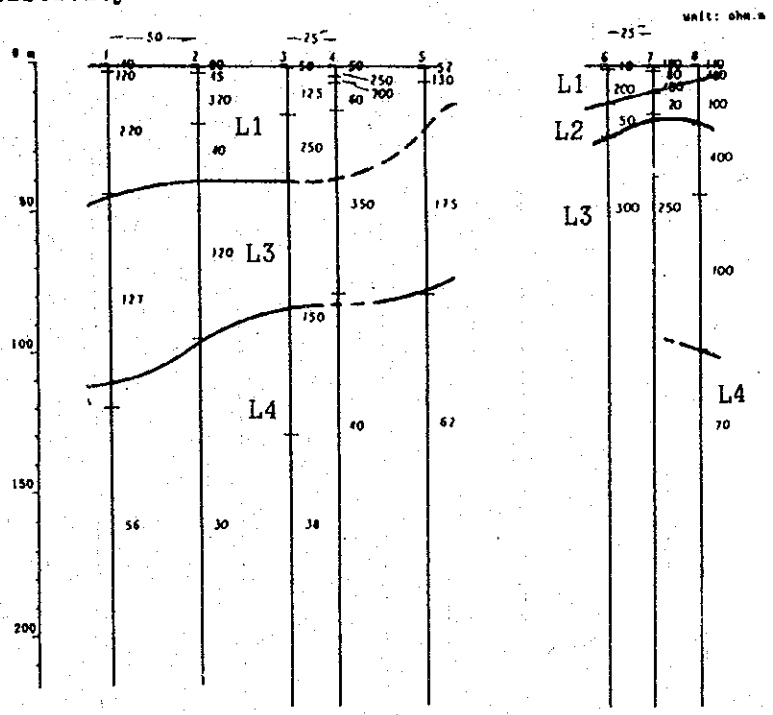
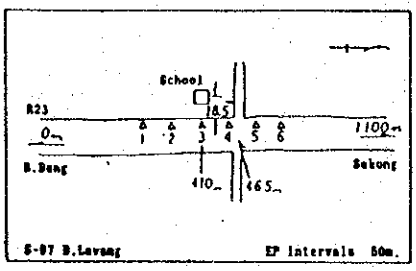
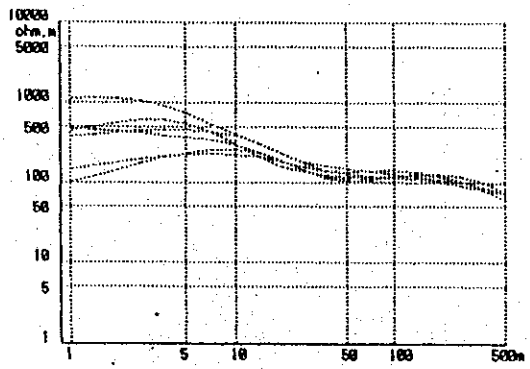


Figure 3.3.2(36/42)	Resistivity Profile S84 B.Beng
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

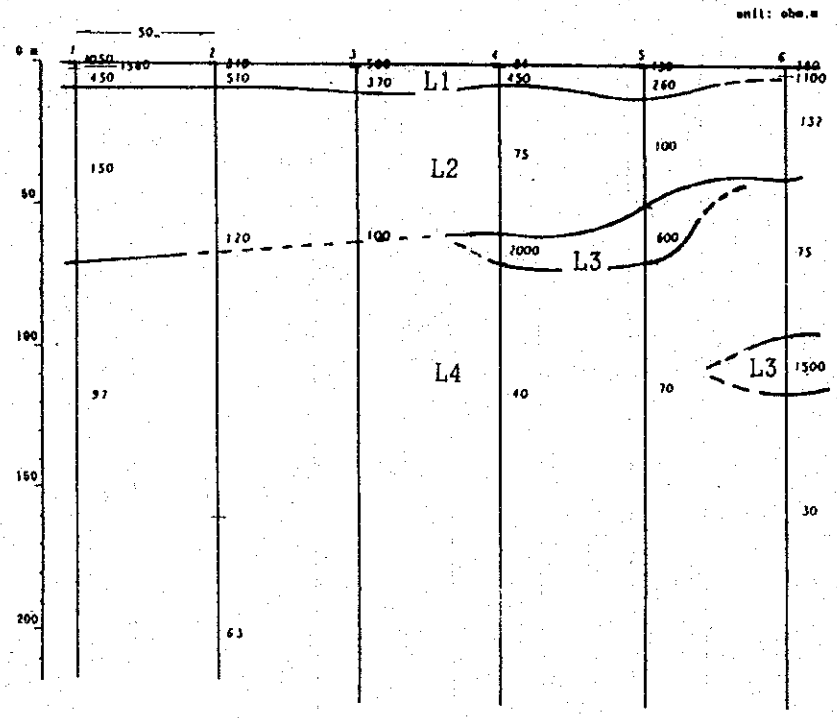
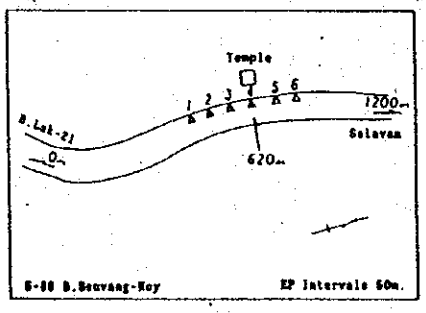
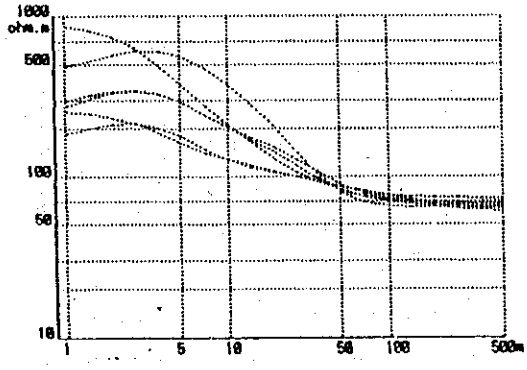


Figure 3.3.2(37/42)	Resistivity Profile S87 B.Lavang
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

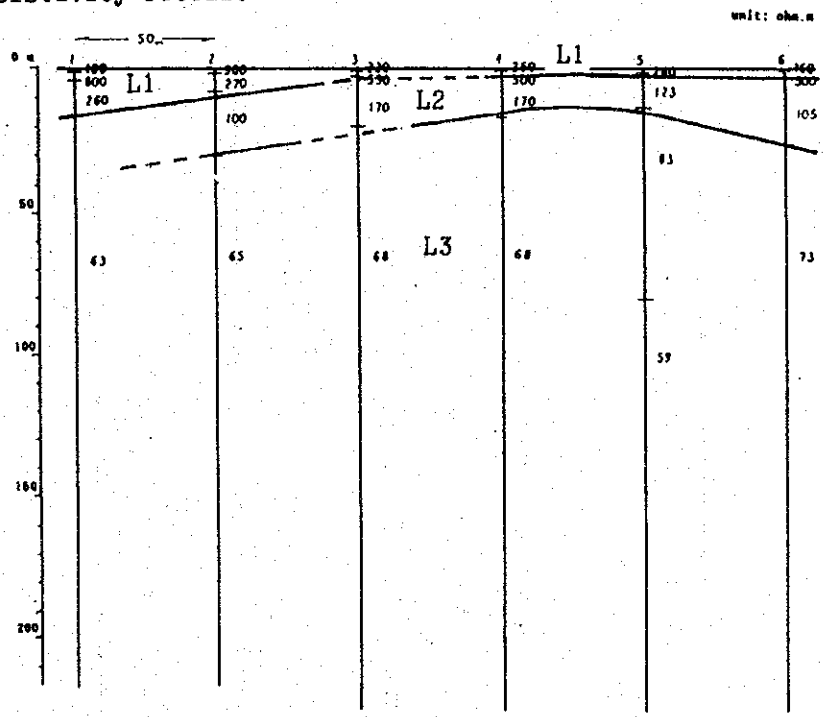
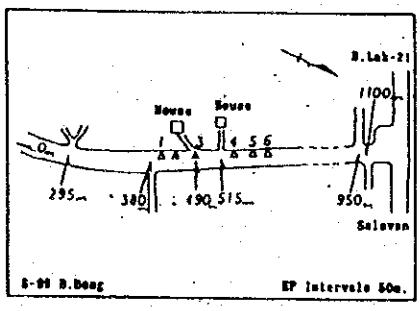
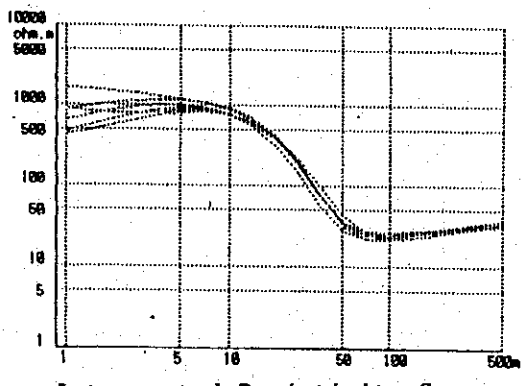


Figure 3.3.2(38/42)	Resistivity Profile S88 B.Senvang-Noy
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

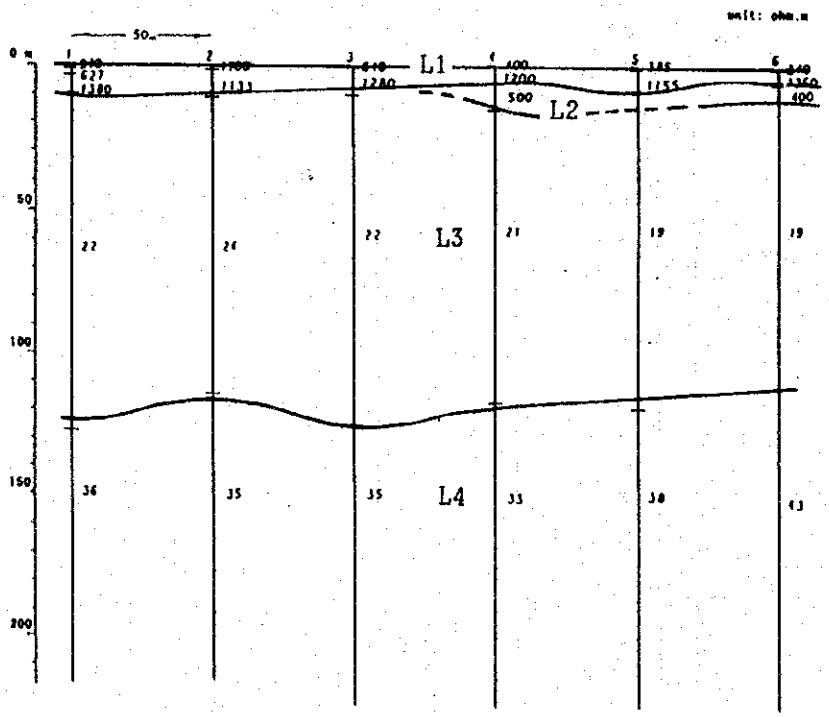
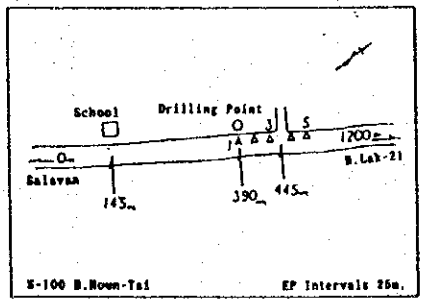
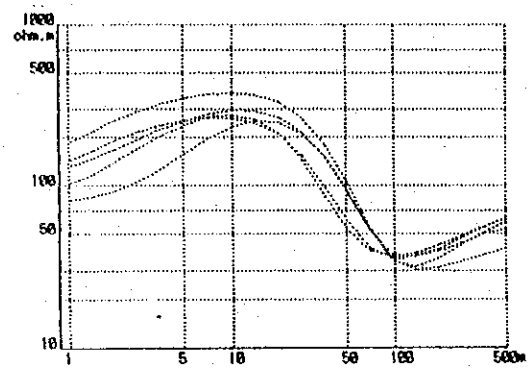


Figure 3.3.2(39/42)	Resistivity Profile S99 B.Beng
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS INC.



Location of E.P. Centre



Interpreted Resistivity Curves

Resistivity Profile

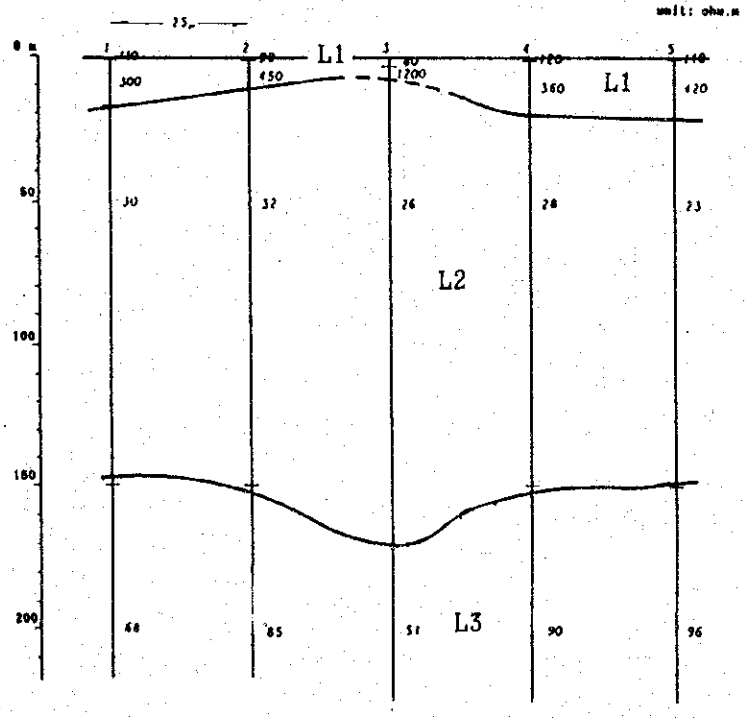
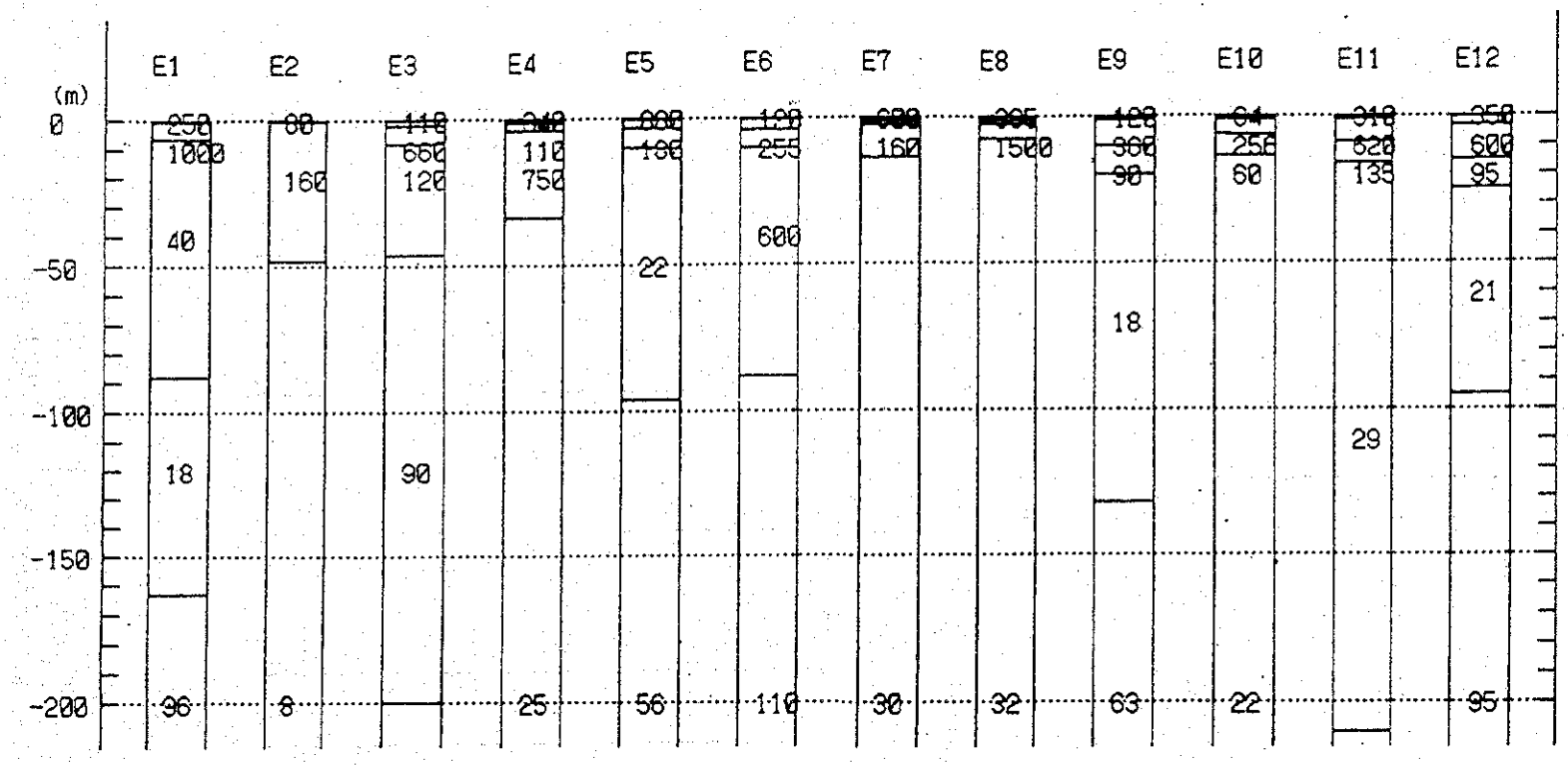


Figure 3.3.2(40/42)	Resistivity Profile S100 B.Houn-Tai
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.

unit: ohm.m



E 1 C 37 B.Nongsai
E 2 B.Lak-29(Paxong)
E 3 B.Thongphai
E 4 3km from B.Latbok to Salavan
E 5 B.Nom-Oudom
E 6 B.Latbok
E 6 B.Latbok
E 7 B.Ten
E 8 B.Phao
E 9 B.Phialat-Mai
E10 B.Thakit-Noy
E11 B.Kokgnang
E12 B.Daxe

Figure 3.3.2(41/42) Resistivity Columns of E 1 to E 12

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)

KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.

B.Houaxe(Pakse)

unit: ohm.m

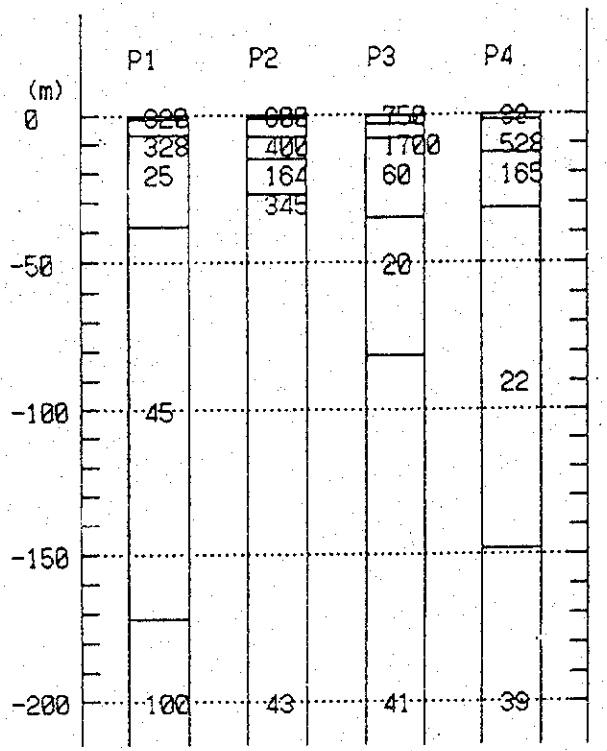


Figure 3.3.2(42/42)	Resistivity Columns in B.Houaxe (Pakse)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.

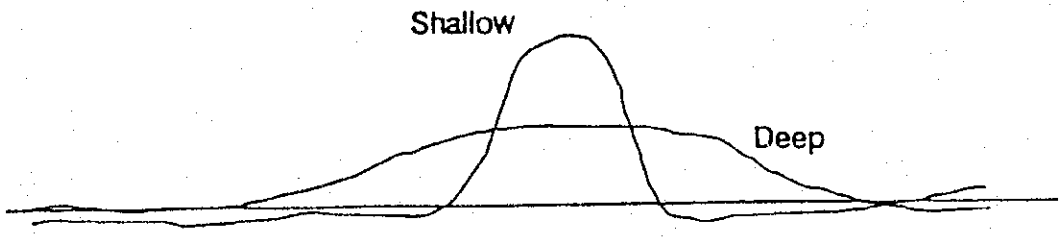


Figure 3.3.3 Difference between Shallow and Deep Conductor

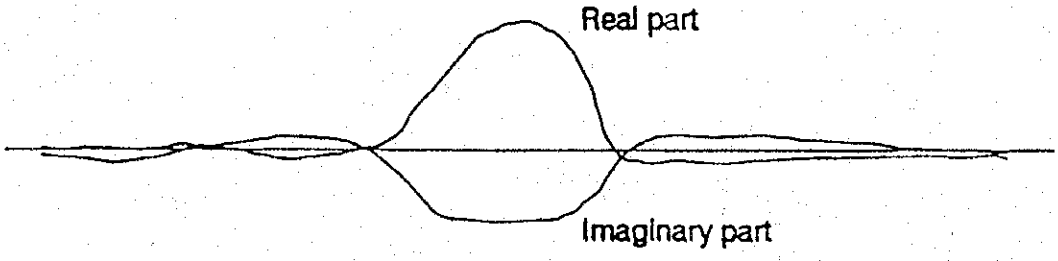


Figure 3.3.4 Typical Anomaly from a Good Conductor

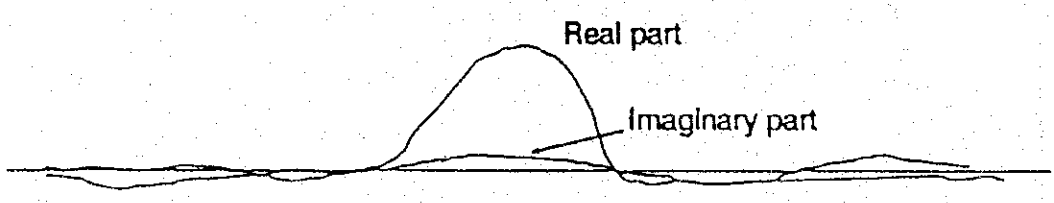
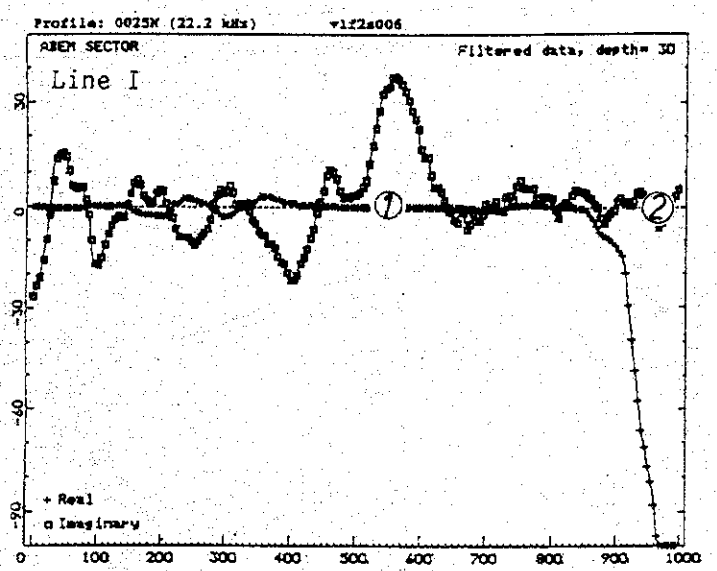
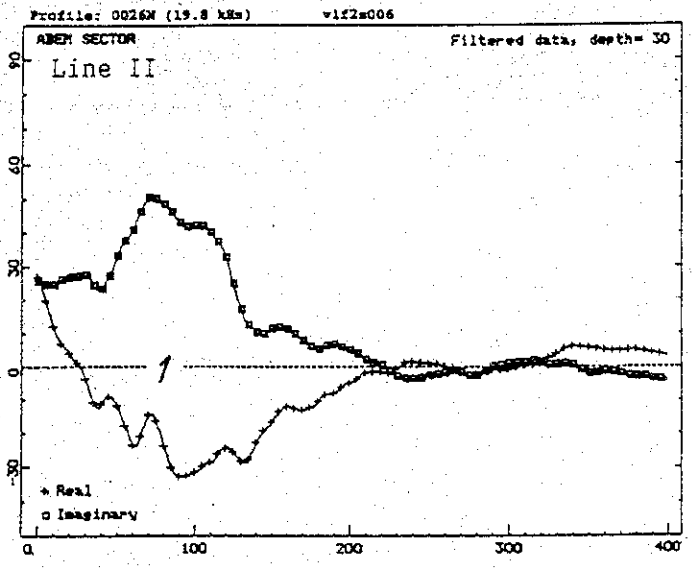
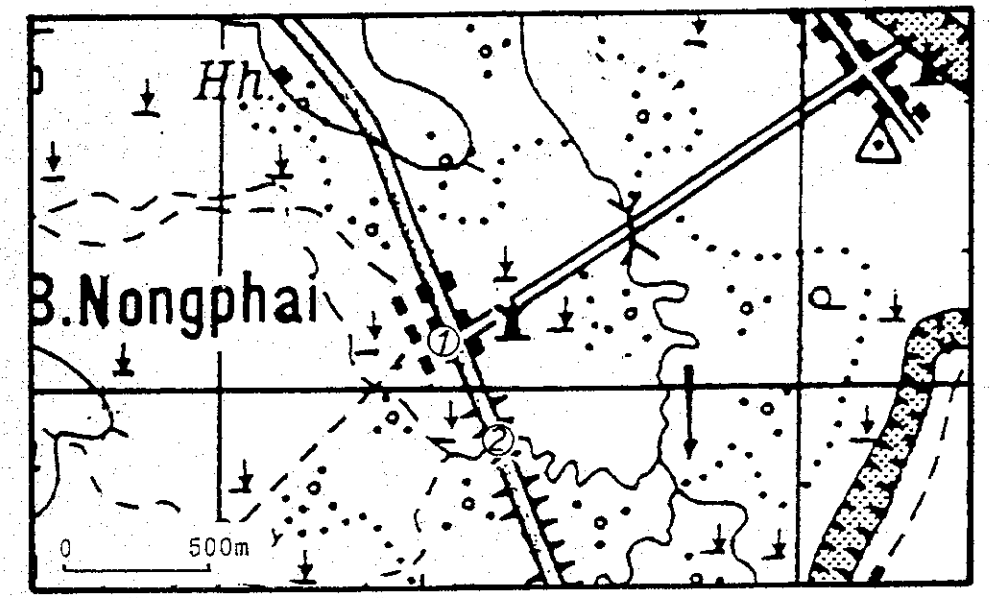
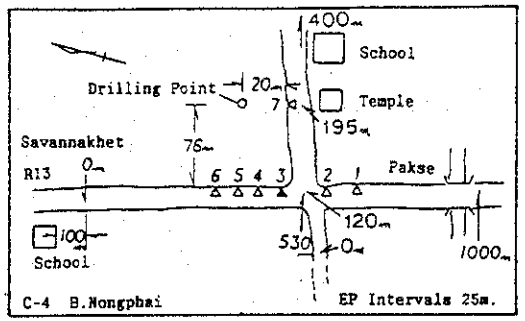


Figure 3.3.5 Typical Anomaly from a Poor Conductor







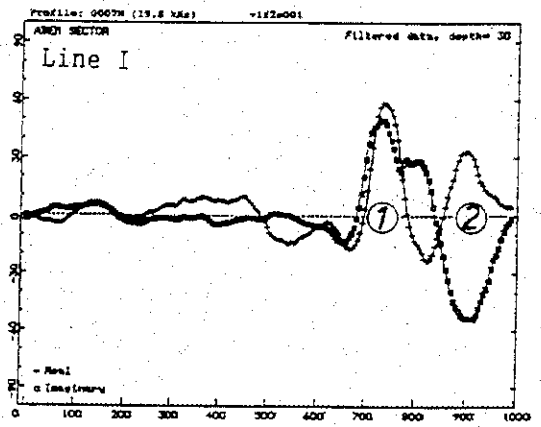


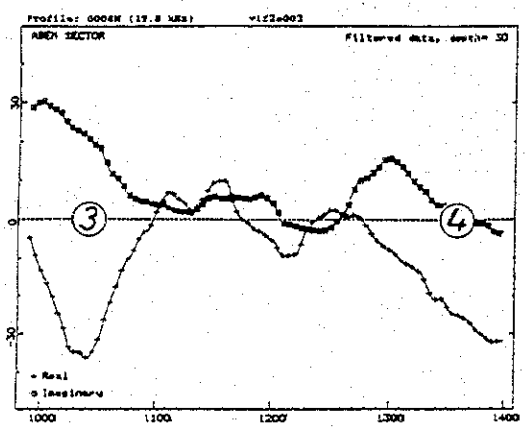
△ E.P.Centre

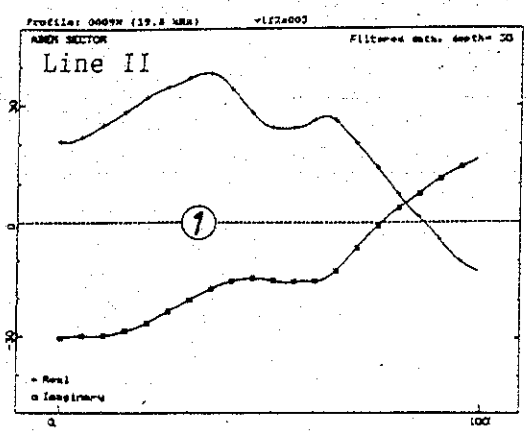
Figure 3.3.6(1/42)	Filtered Data and Anomaly Indication on VLF method (C 4 B.Nongphai)

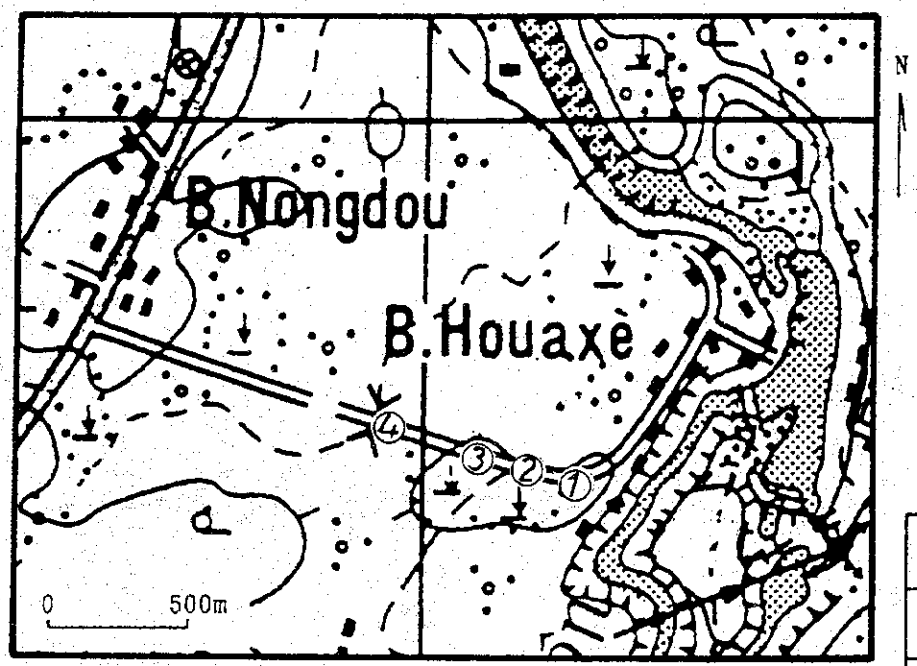
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

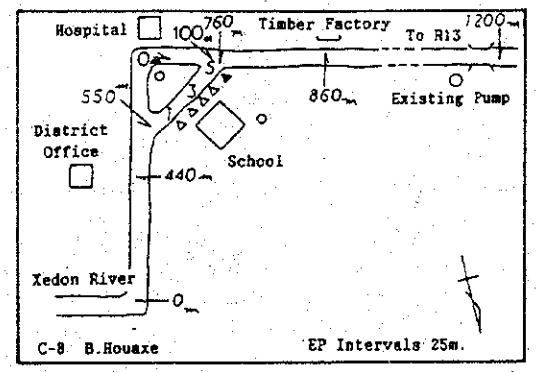
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.









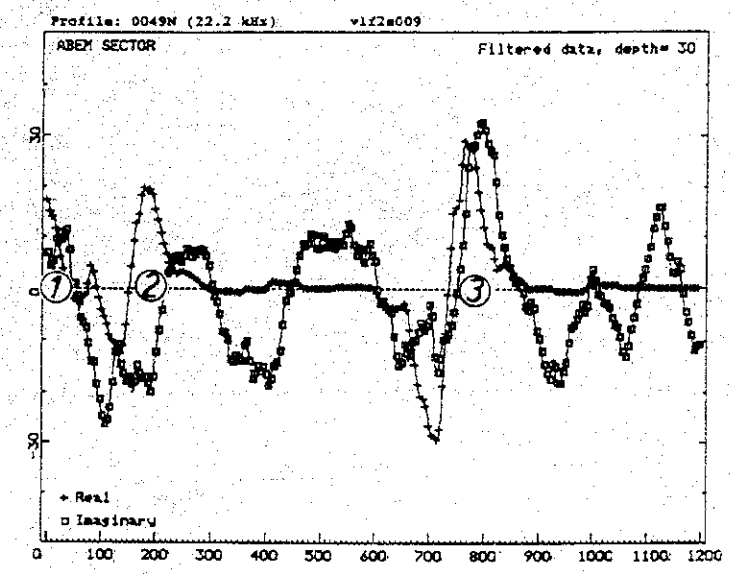


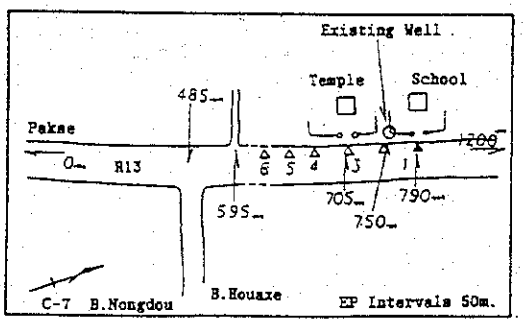
△ E.P.Centre

Figure 3.3.6(2/42)	Filtered Data and Anomaly Indication on VLF method (C 8 B.Houaxe)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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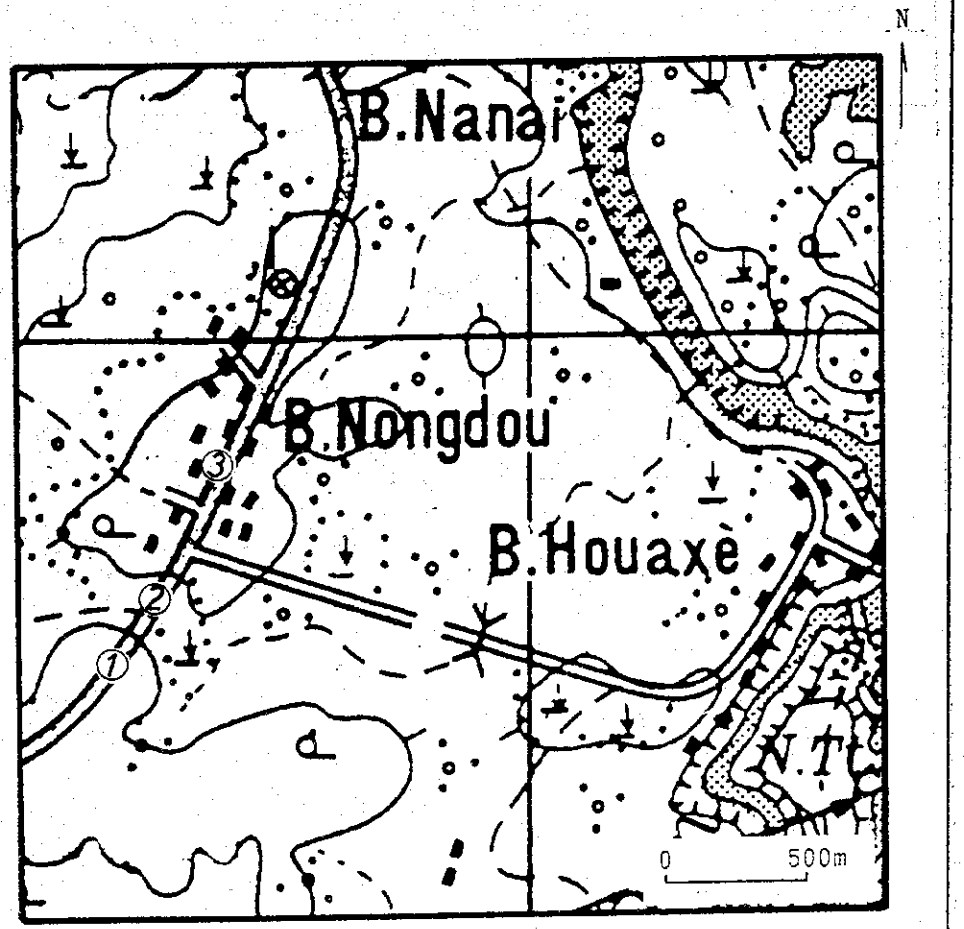
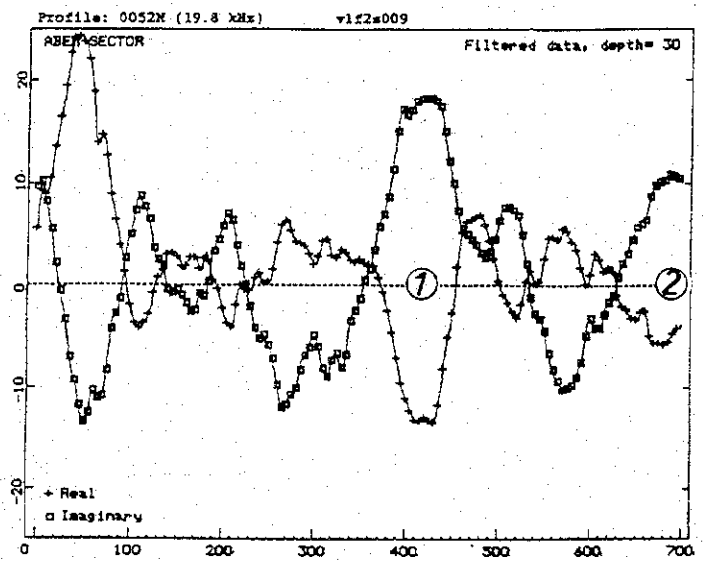
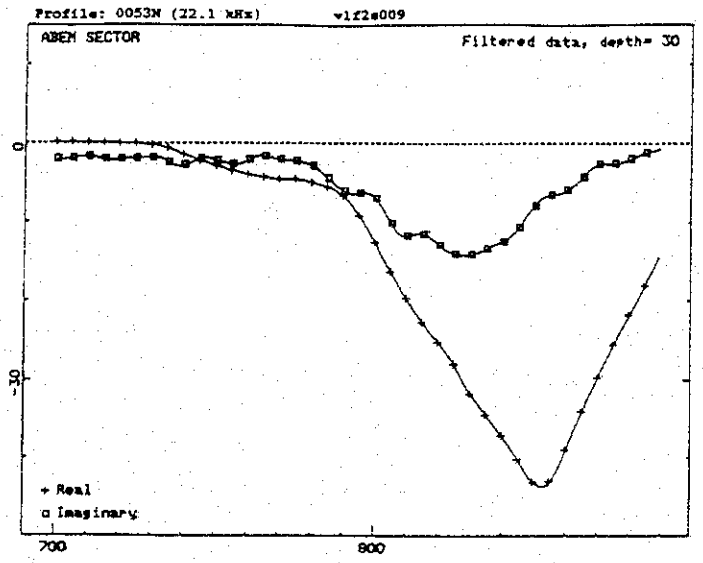


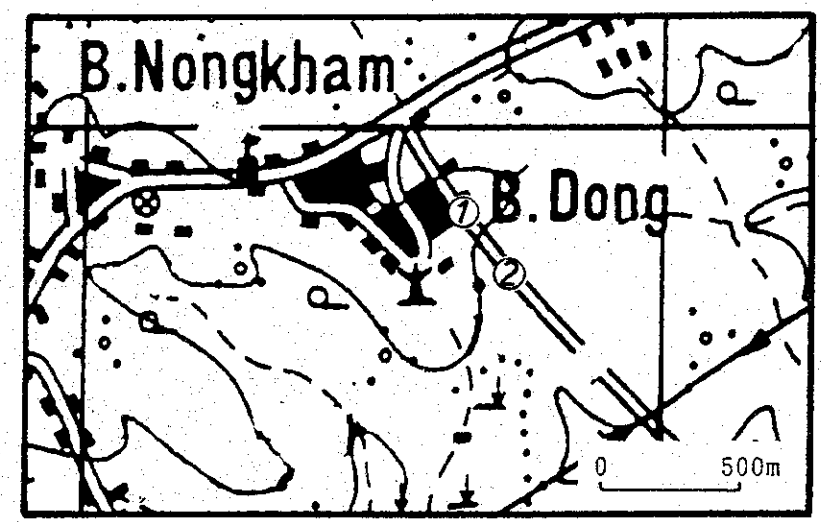
Figure 3.3.6(3/42)	Filtered Data and Anomaly Indication on VLF method (C 7 B.Nongdou)

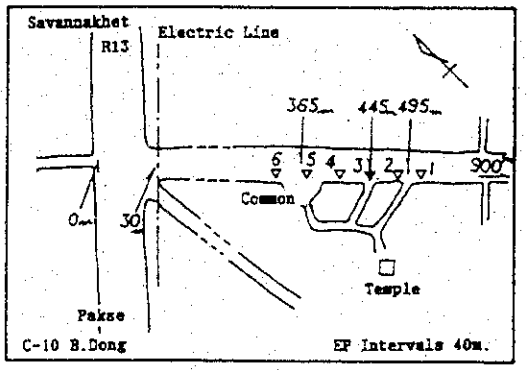
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







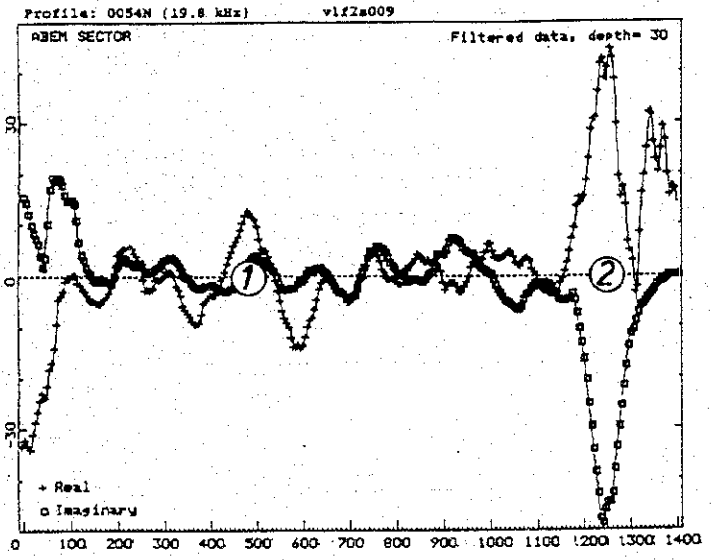


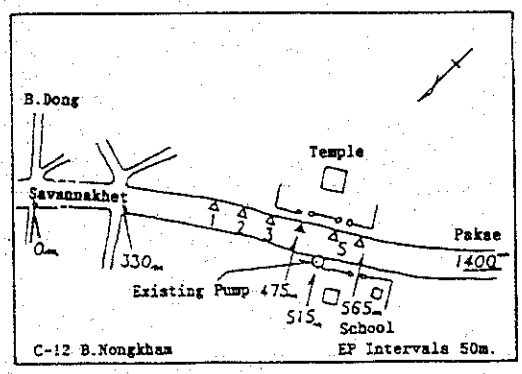
△ E.P.Centre

Figure 3.3.6(4/42)	Filtered Data and Anomaly Indication on VLF method (C 10 B.Dong)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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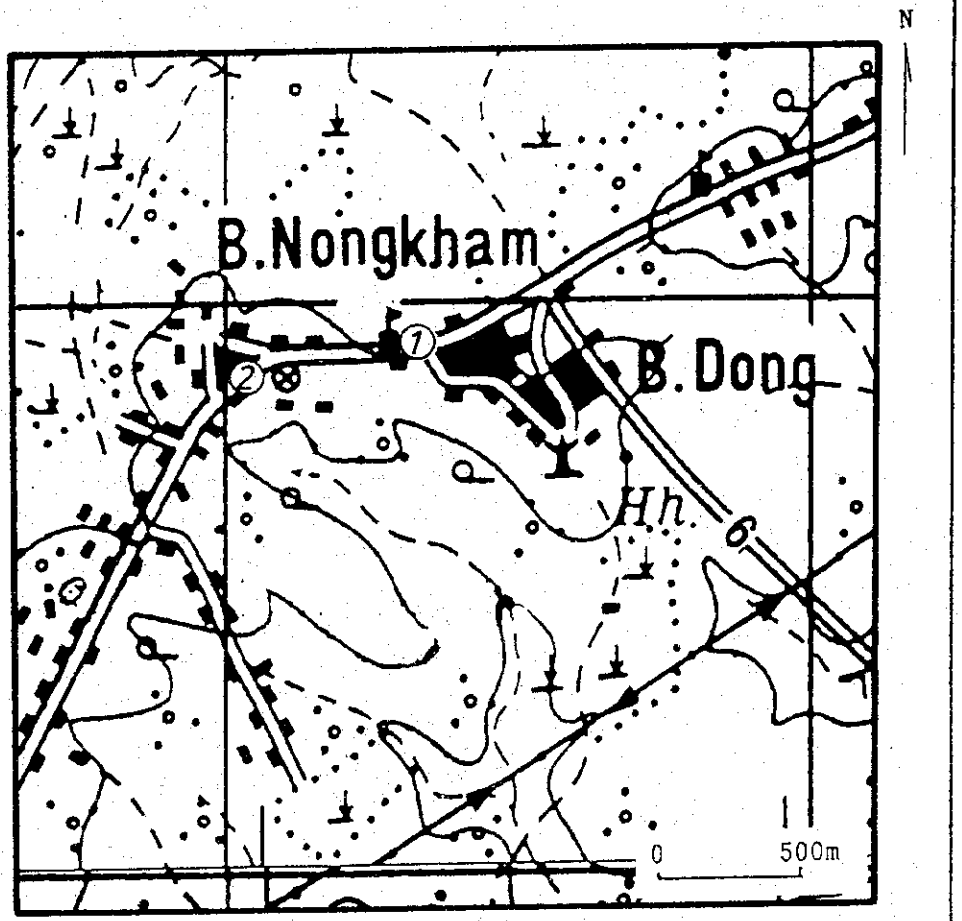
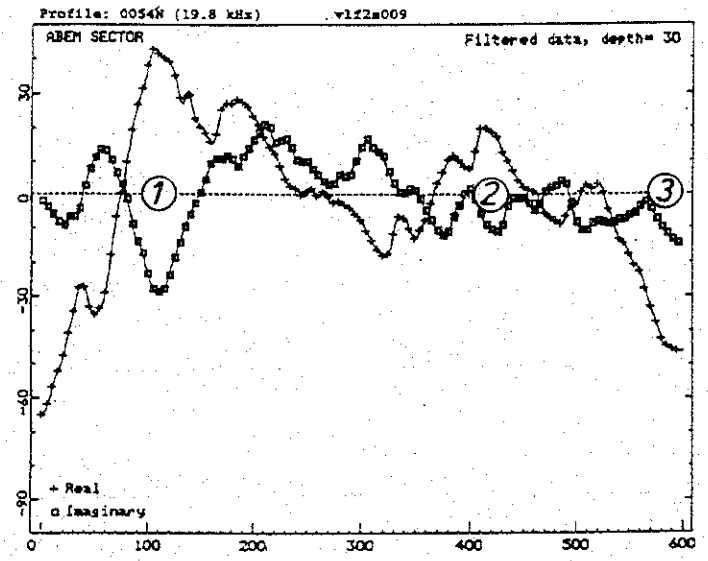
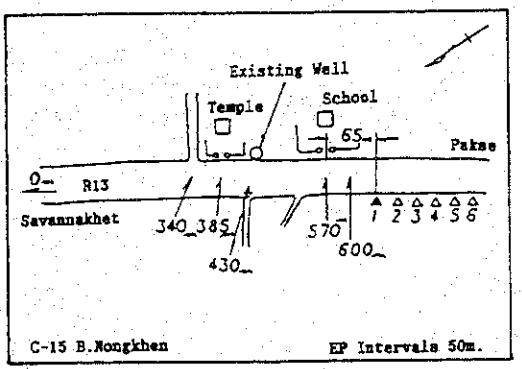


Figure 3.3.6(5/42)	Filtered Data and Anomaly Indication on VLF method (C 12 B.Nongkham)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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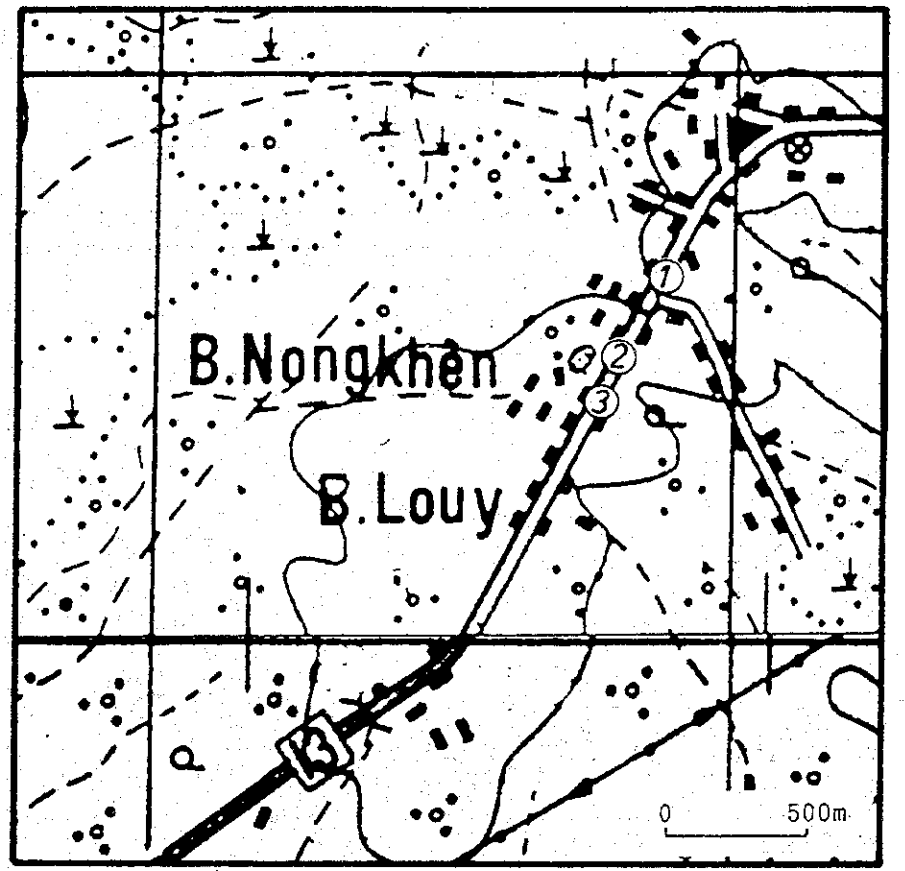
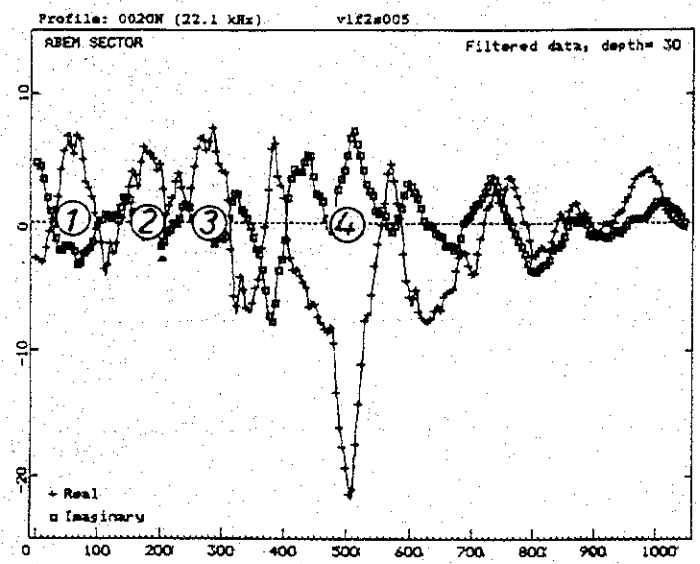
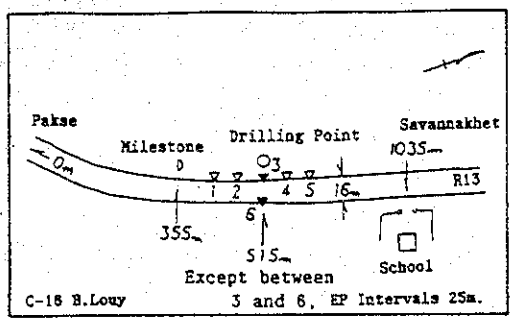


Figure 3.3.6(6/42)	Filtered Data and Anomaly Indication on VLF method (C 15 B.Nongkhen)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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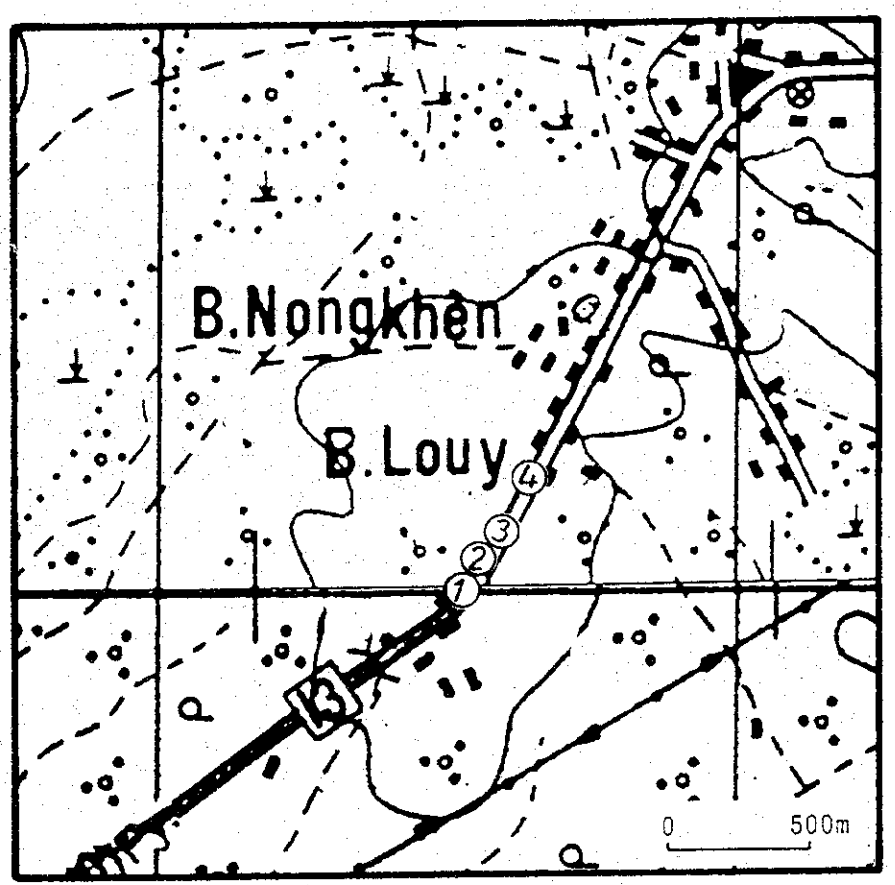

Figure 3.3.6(7/42)	Filtered Data and Anomaly Indication on VLF method (C 16 B.Louy)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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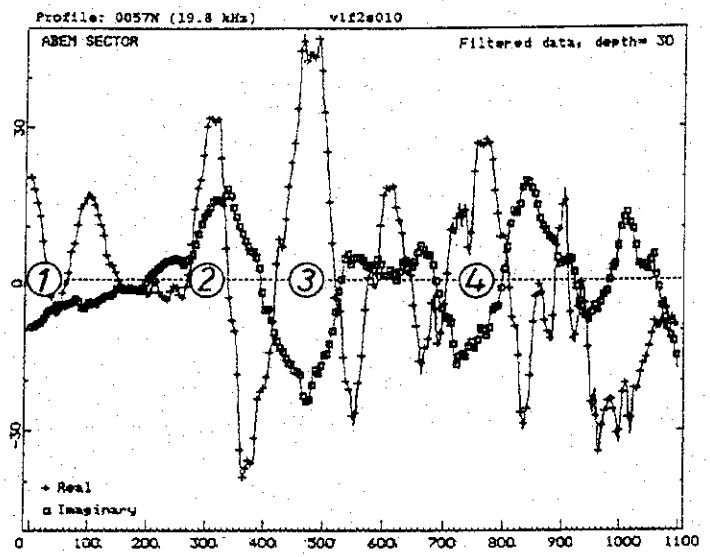

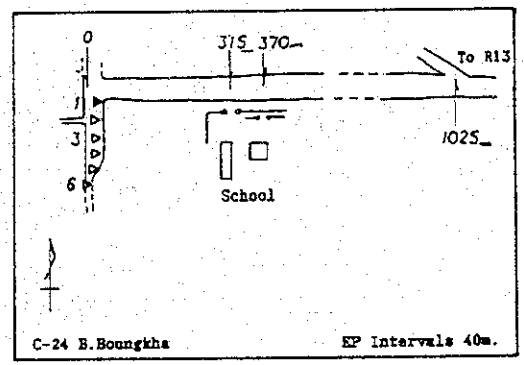

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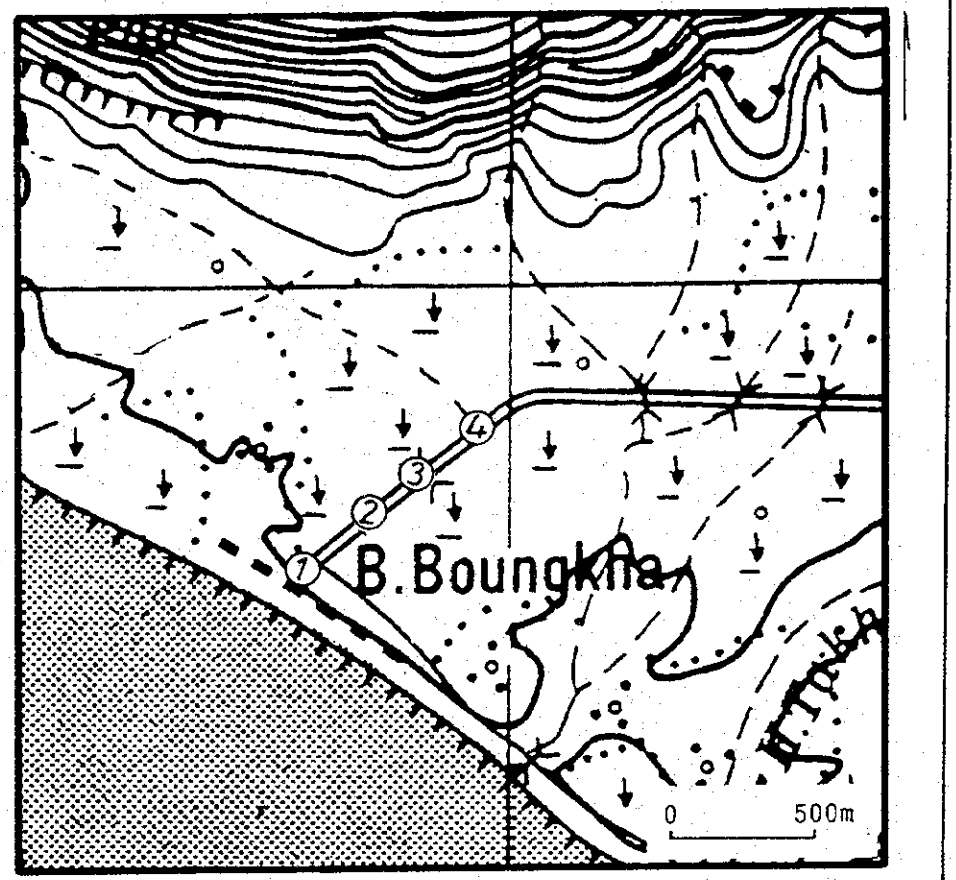
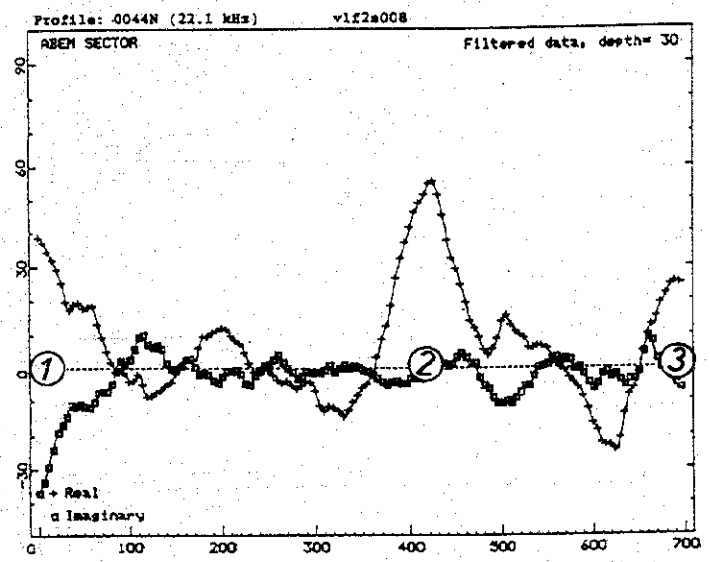
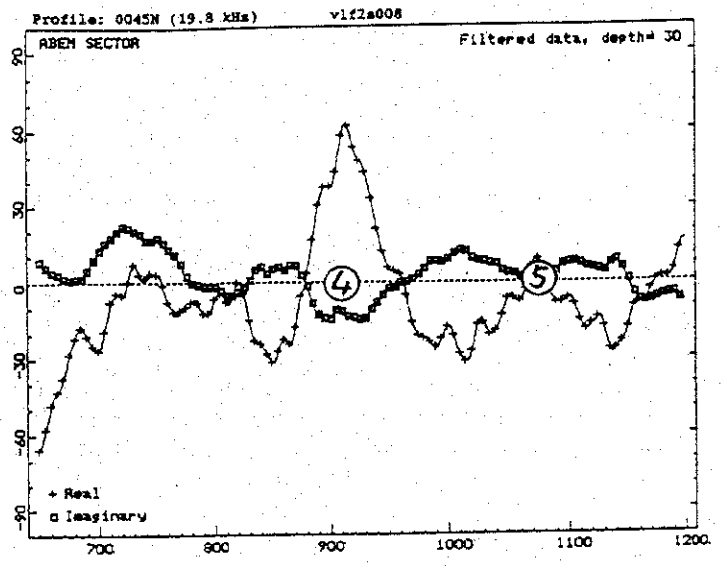
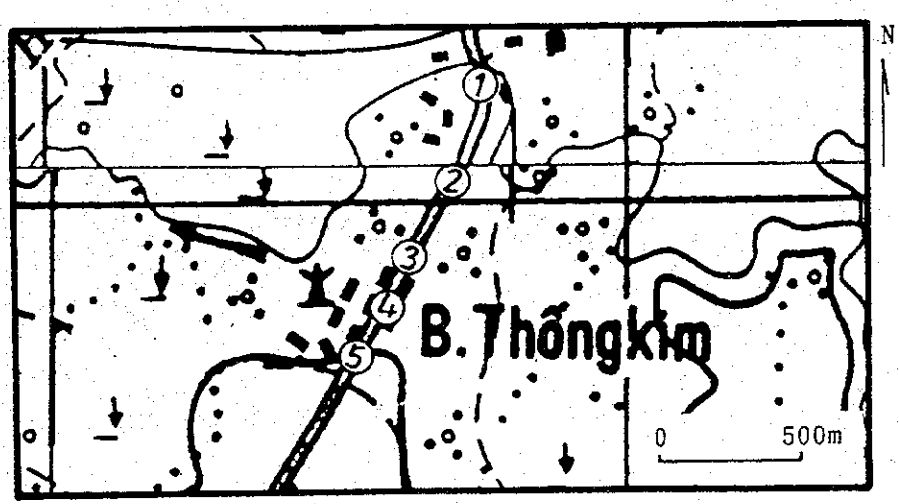


Figure 3.3.6(8/42)	Filtered Data and Anomaly Indication on VLF method (C 24 B.Boungkha)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







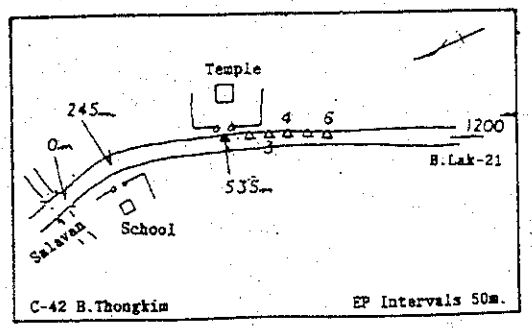


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Figure 3.3.6(9/42)	Filtered Data and Anomaly Indication on VLF method (C 42 B.Thongkhim)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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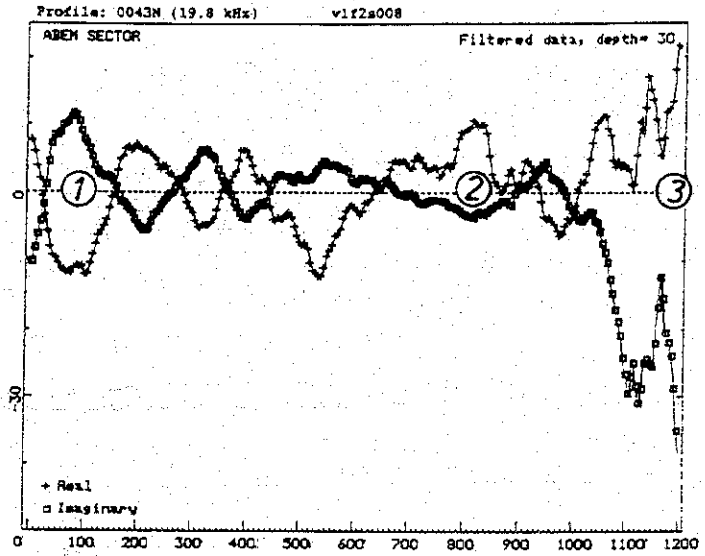

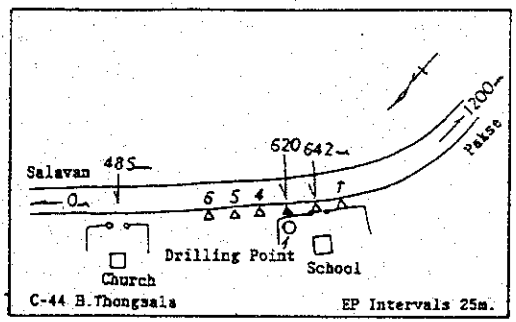

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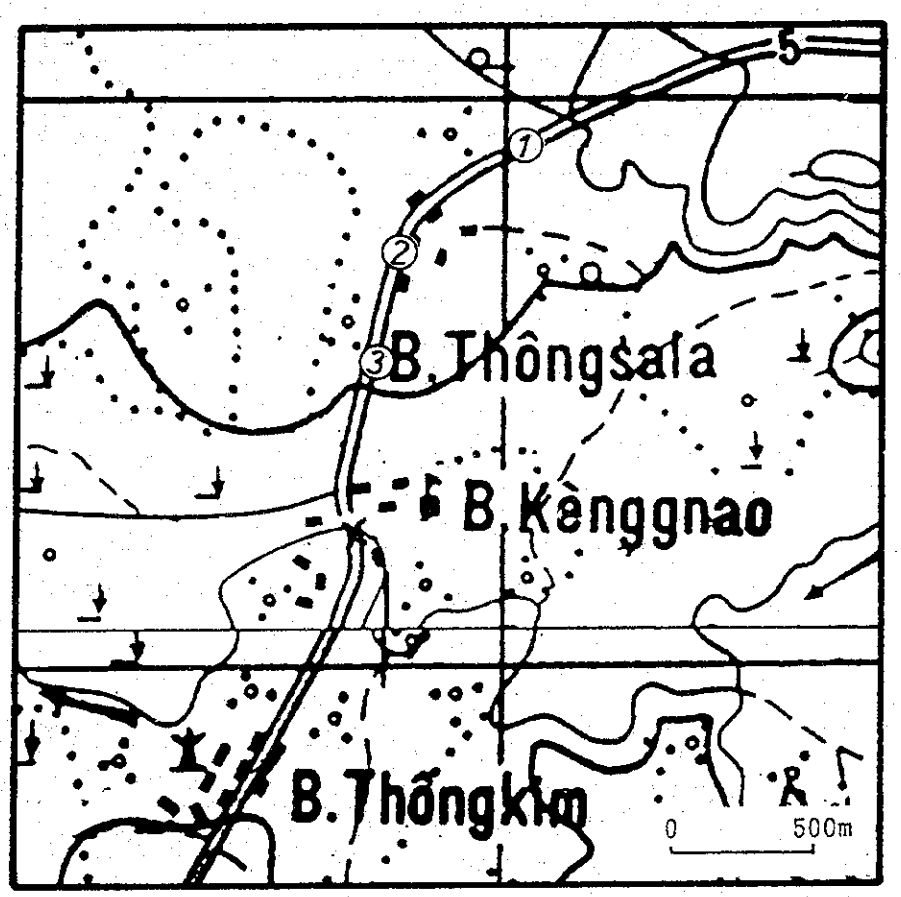
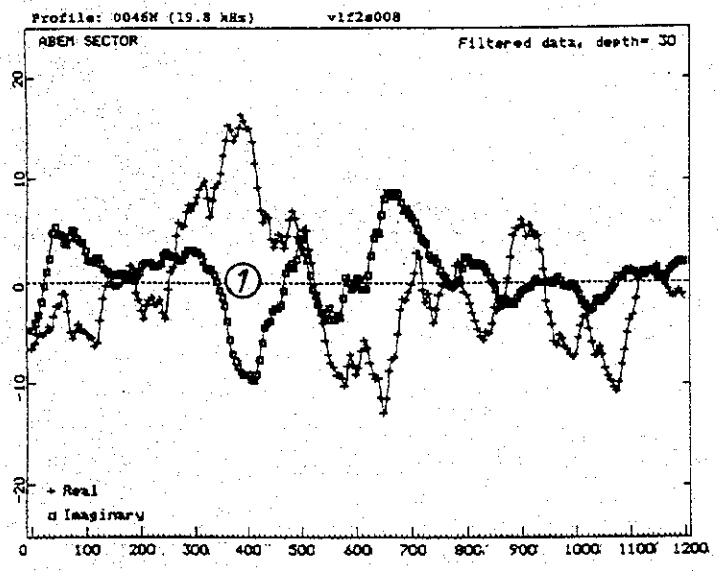
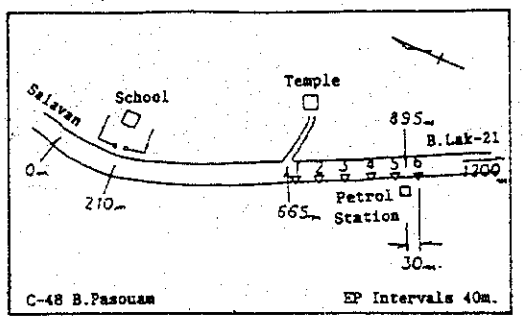


Figure 3.3.6(10/42)	Filtered Data and Anomaly Indication on VLF method (C 44 B.Thongsala)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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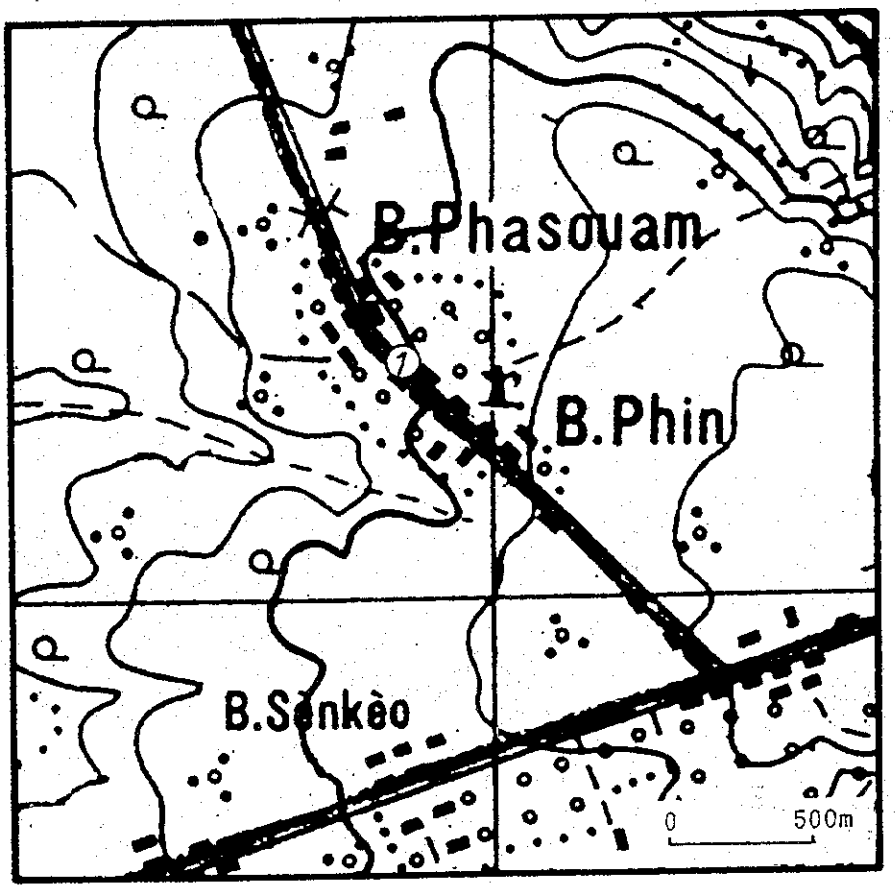
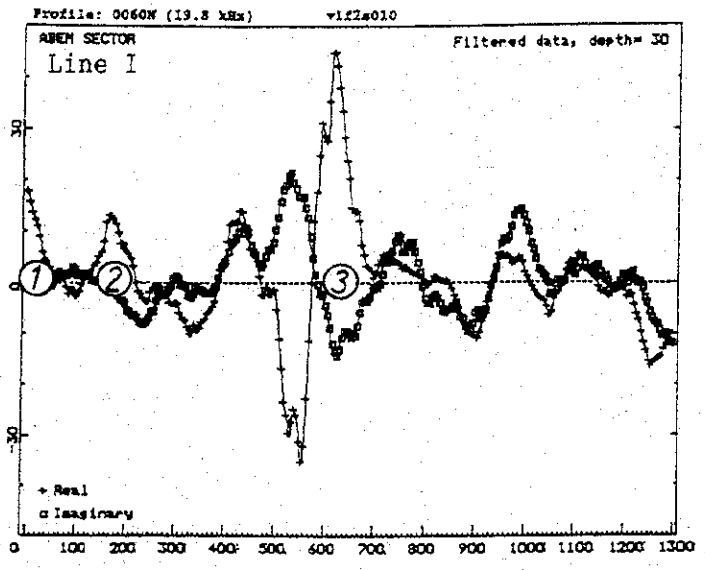
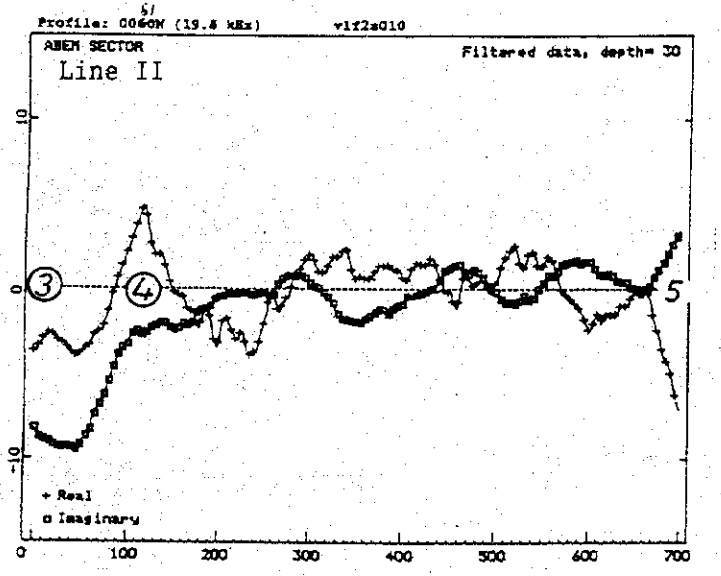
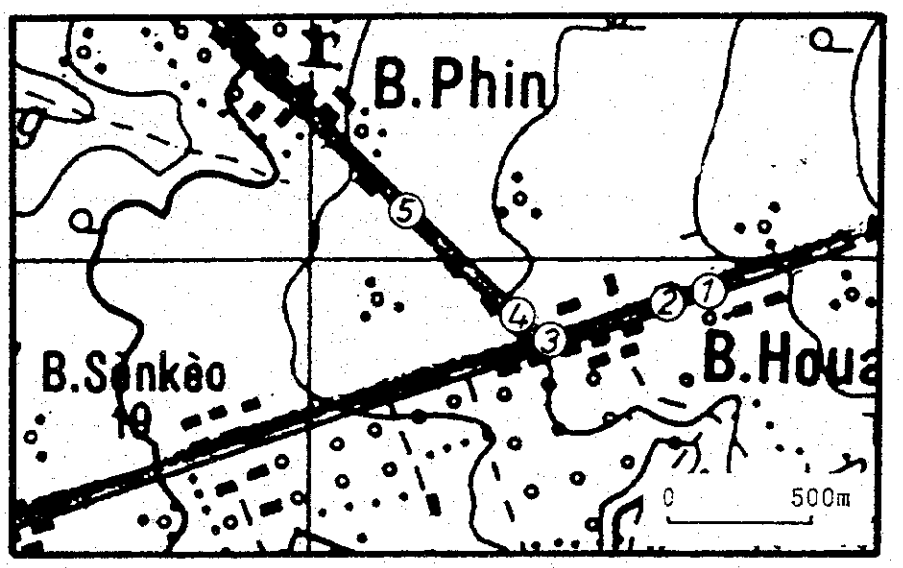
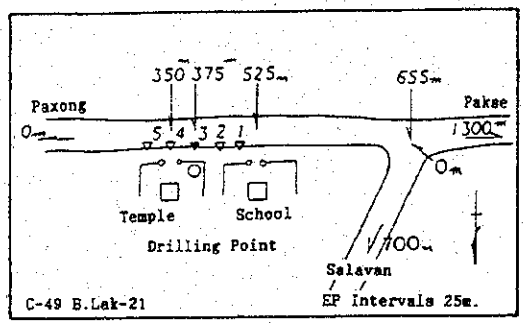


Figure 3.3.6(11/42)	Filtered Data and Anomaly Indication on VLF method (C 48 B.Pasouam)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







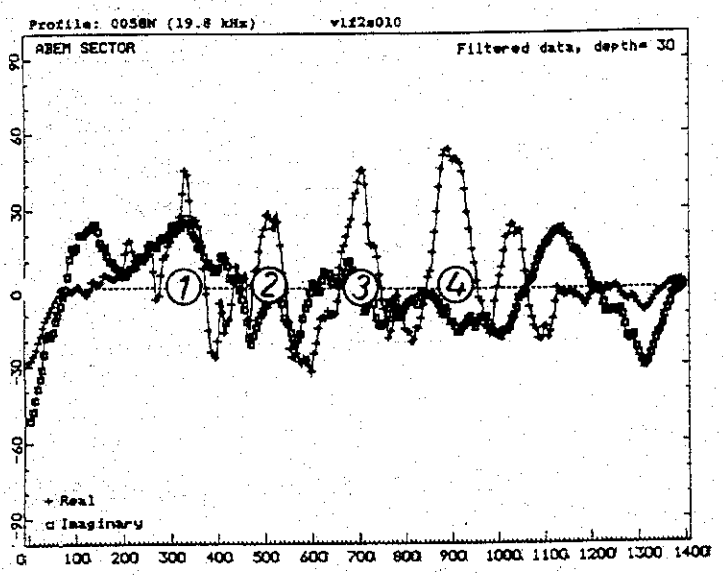


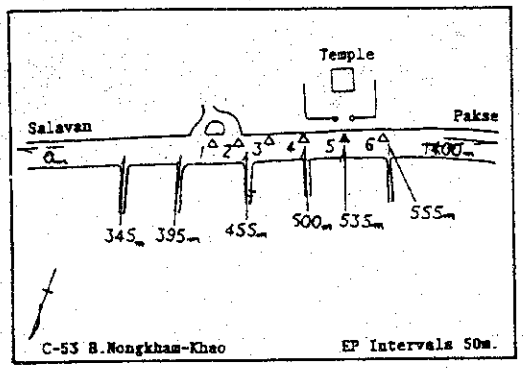
△ E.P.Centre

Figure 3.3.6(12/42)	Filtered Data and Anomaly Indication on VLF method (C 49 B.Lak-21)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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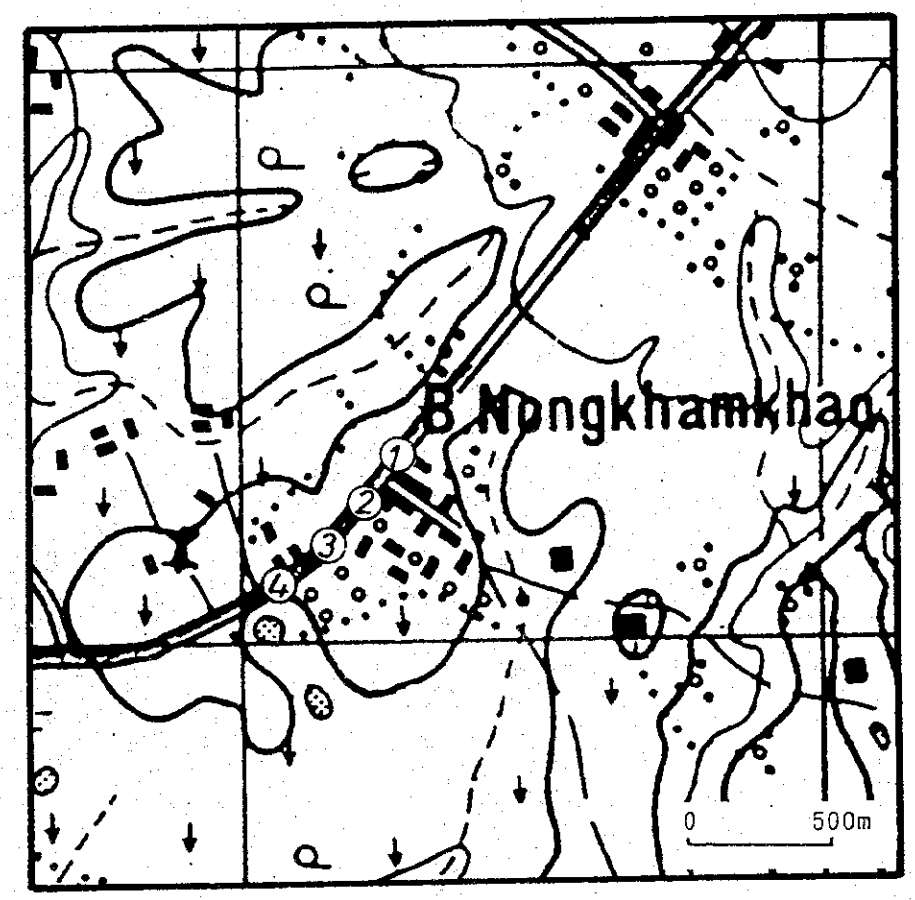

Figure 3.3.6(13/42)	Filtered Data and Anomaly Indication on VLF method (C 53 B.Nongkham-Khao)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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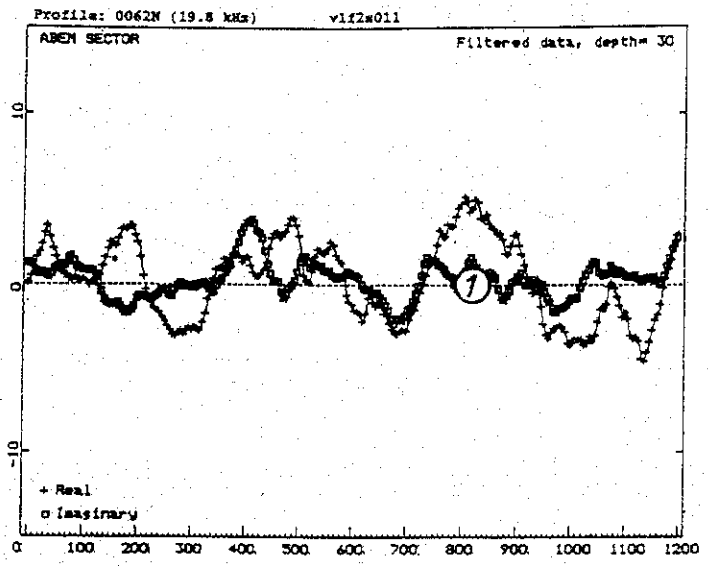

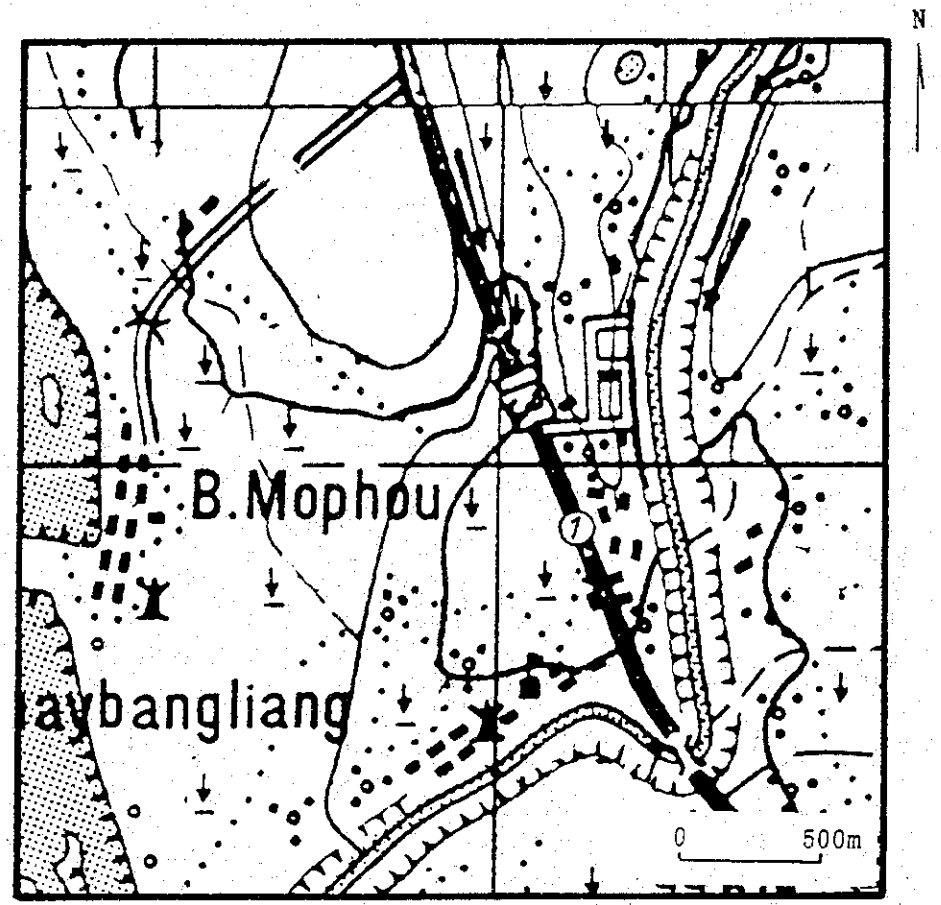

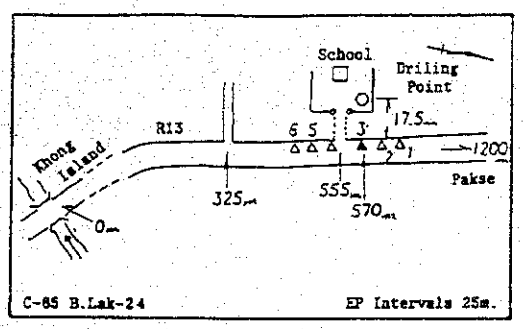

△ E.P.Centre

Figure 3.3.6(14/42)	Filtered Data and Anomaly Indication on VLF method (C 65 B.Lak-24)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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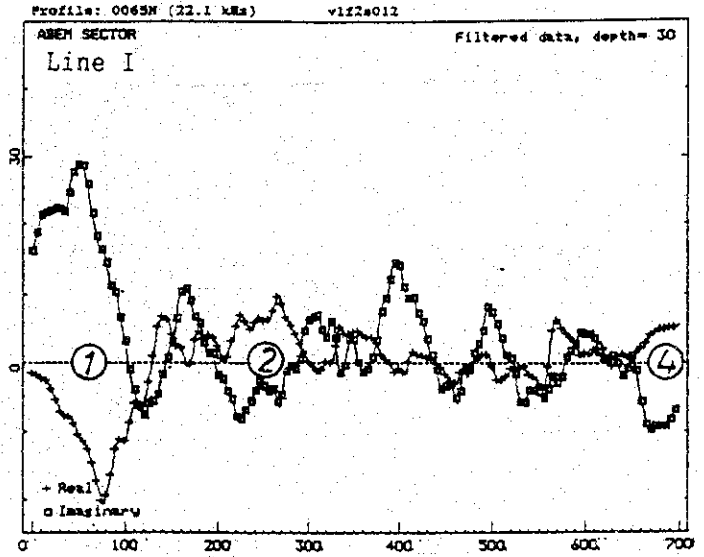

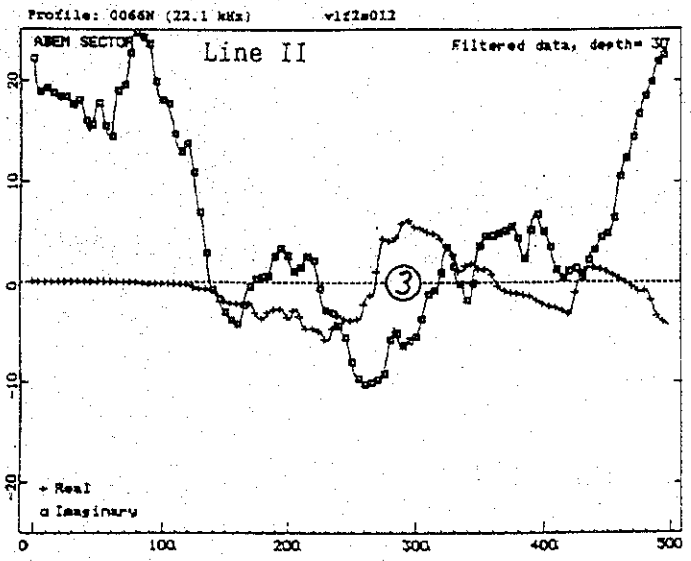

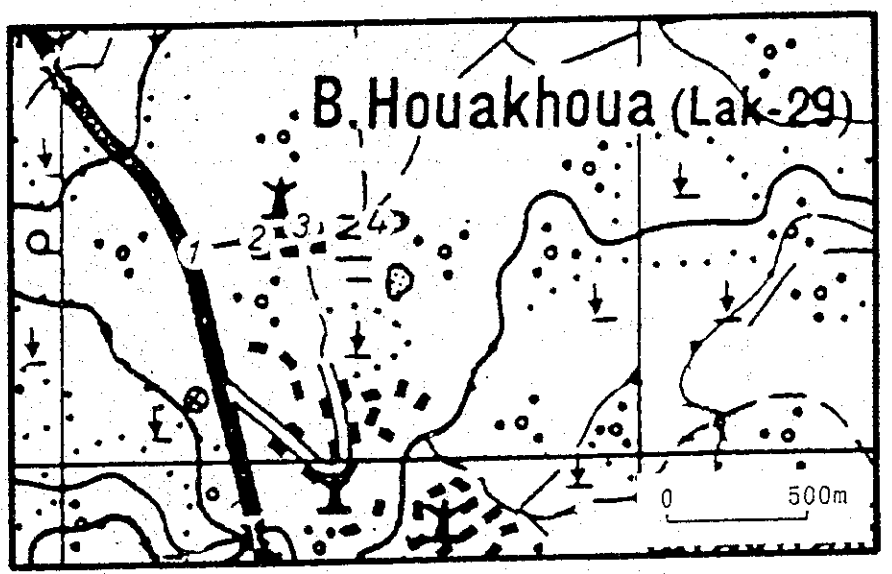

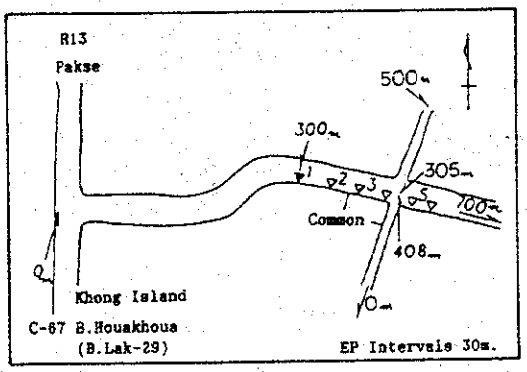

△ E.P.Centre

Figure 3.3.6(15/42)	Filtered Data and Anomaly Indication on VLF method (C 67 B.Houakhoua:Lak-29)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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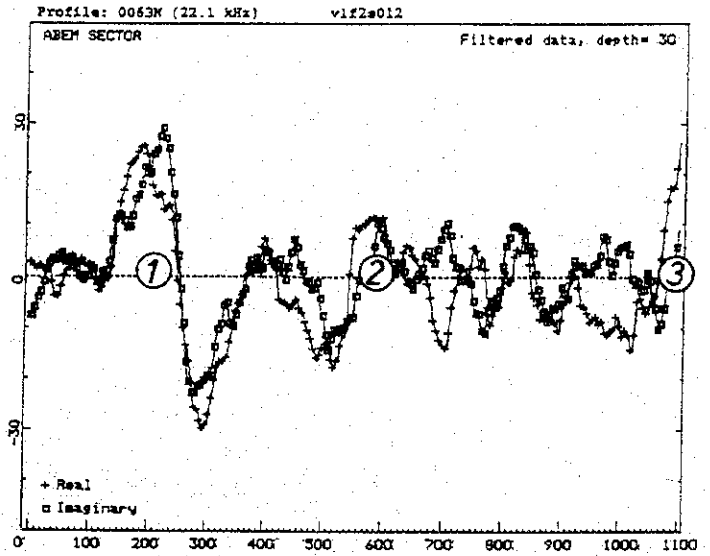

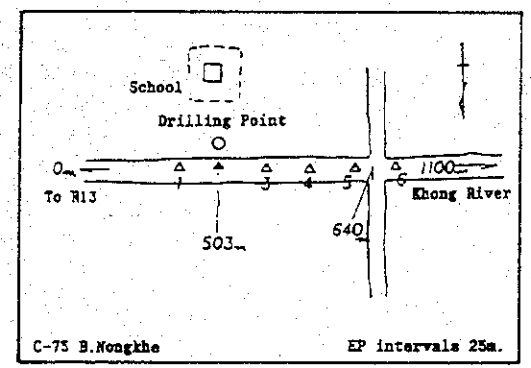

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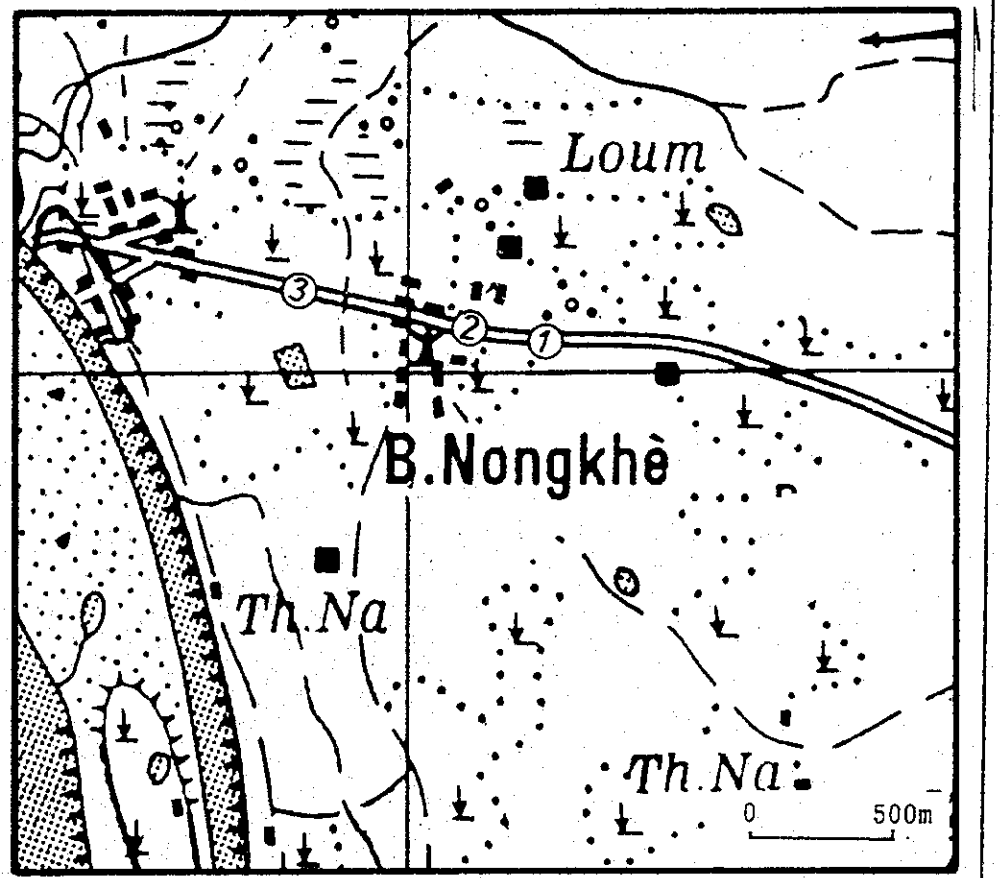

Figure 3.3.6(16/42)	Filtered Data and Anomaly Indication on VLF method (C 75 B.Nongkhe)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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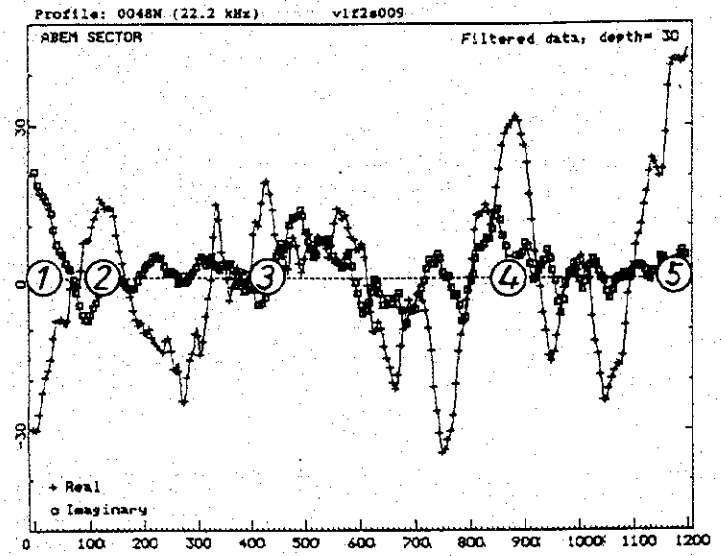
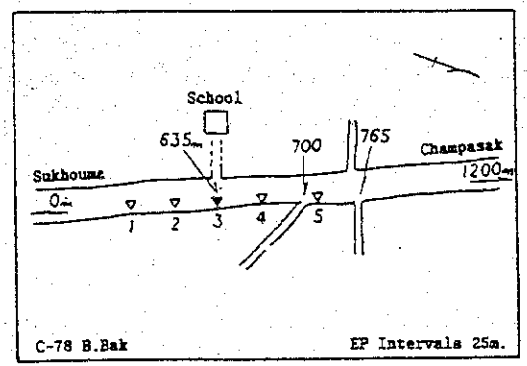
S3-80





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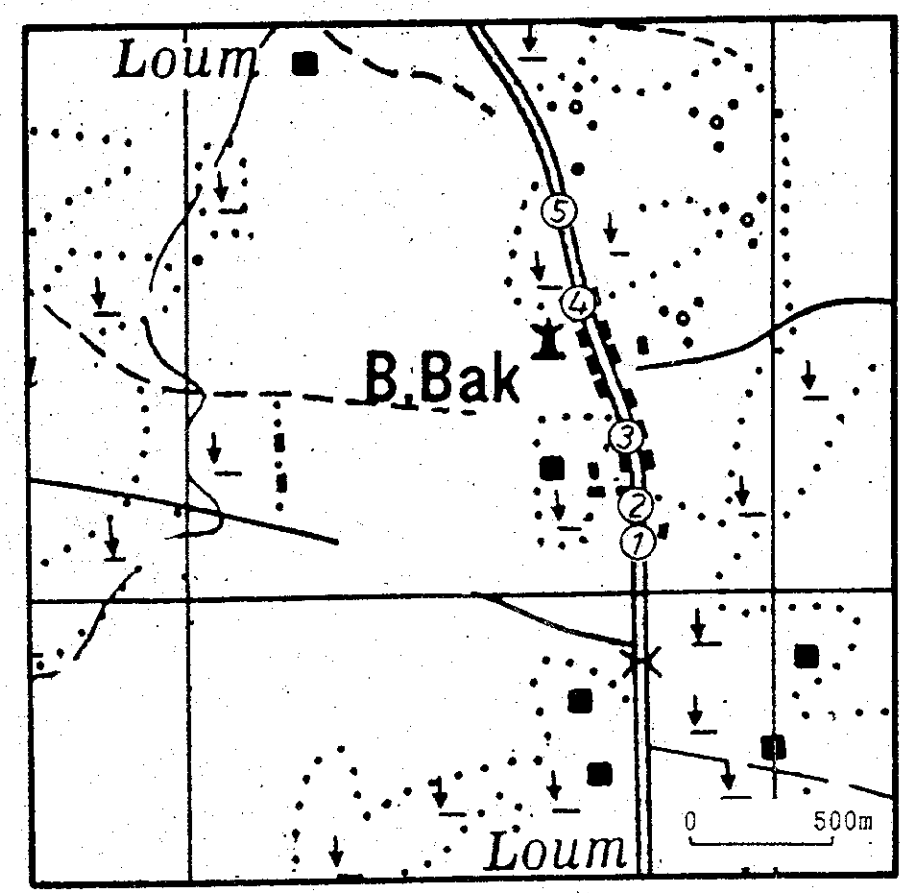
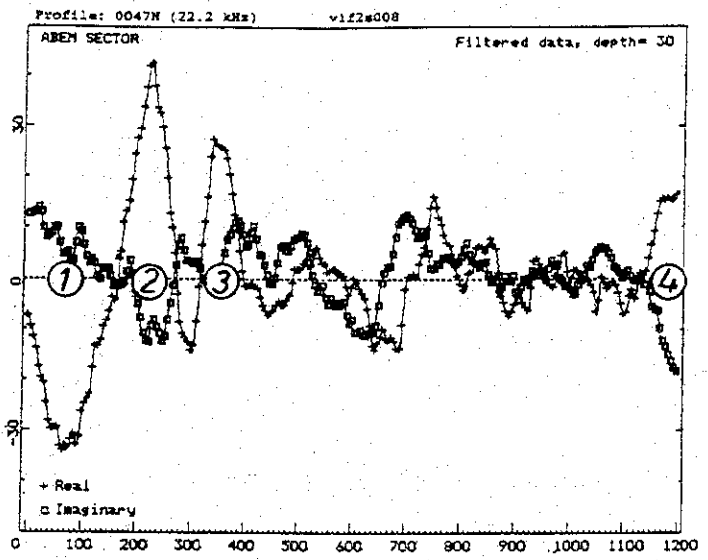
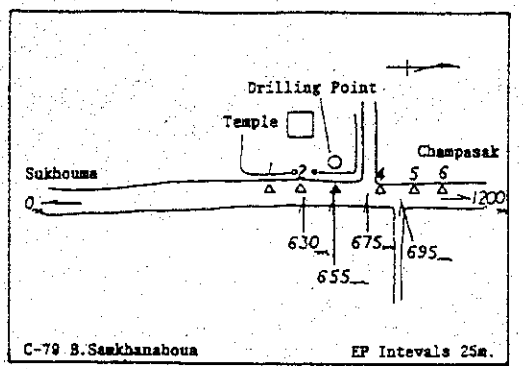


Figure 3.3.6(17/42)	Filtered Data and Anomaly Indication on VLF method (C 78 B.Bak)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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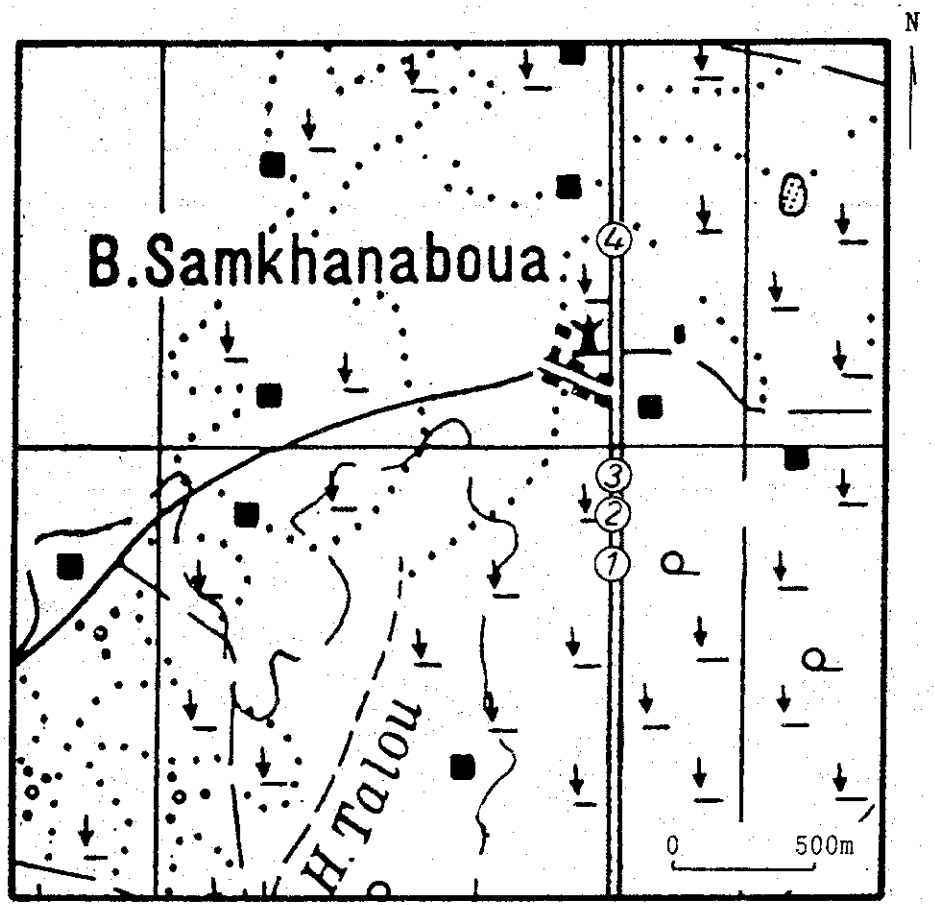

Figure 3.3.6(18/42)	Filtered Data and Anomaly Indication on VLF method (C 79 B.Samkhanaboua)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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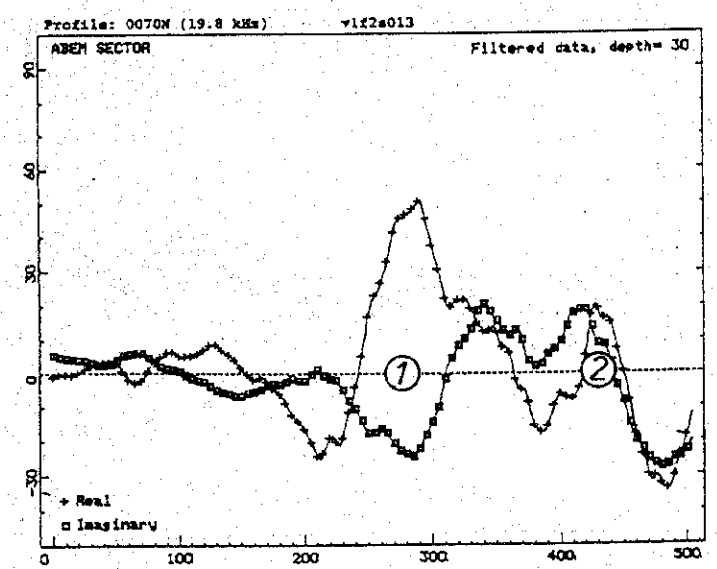

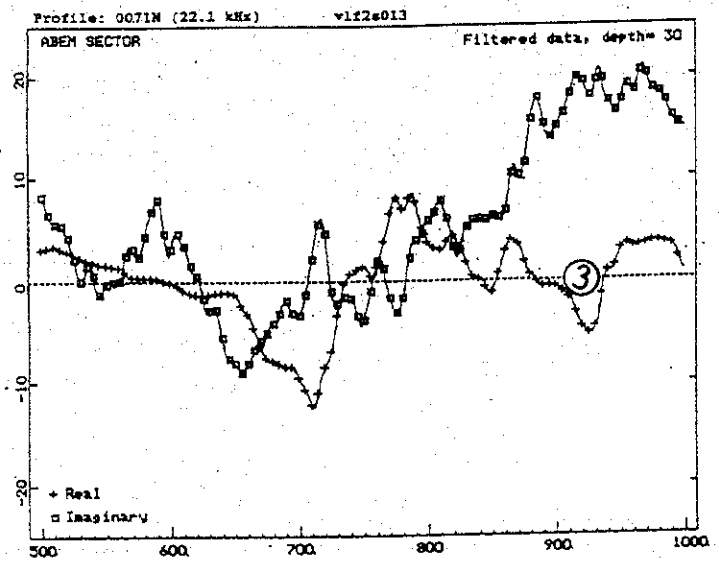

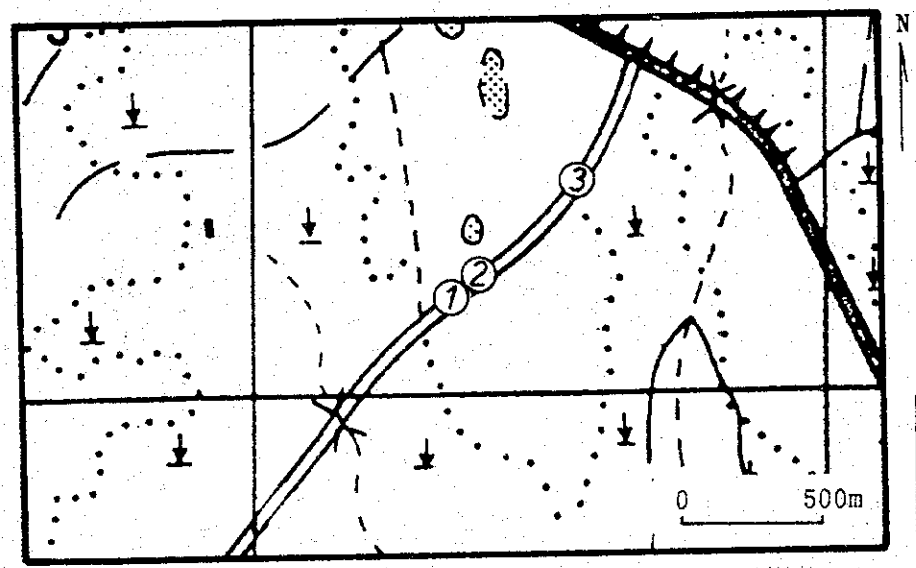

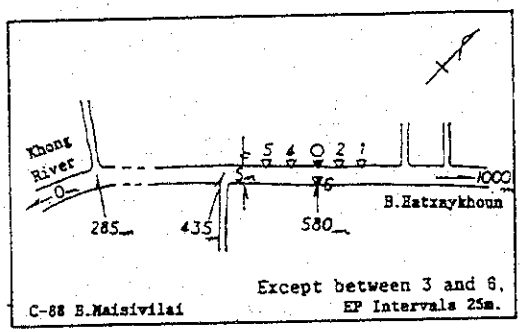

△ E.P.Centre

Figure 3.3.6(19/42)	Filtered Data and Anomaly Indication on VLF method (C 88 B.Maisivilai)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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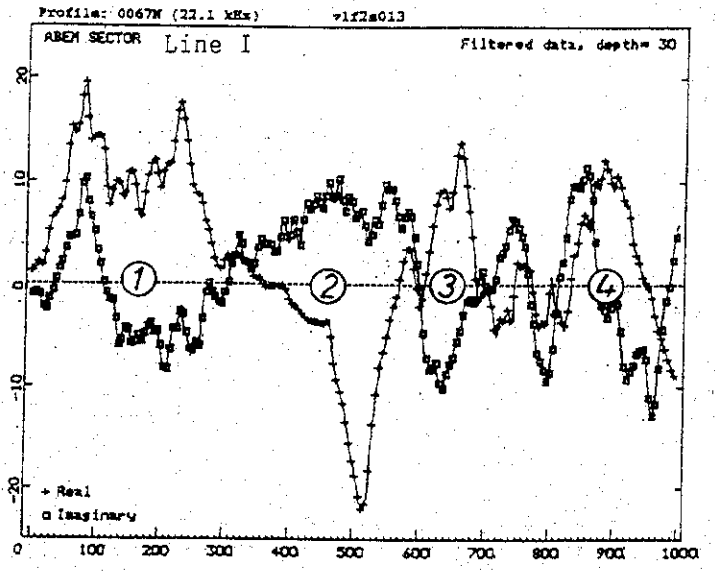

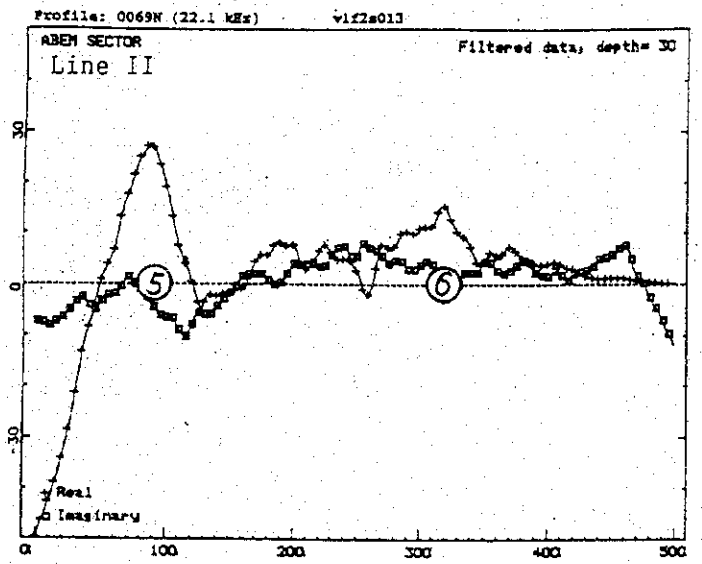

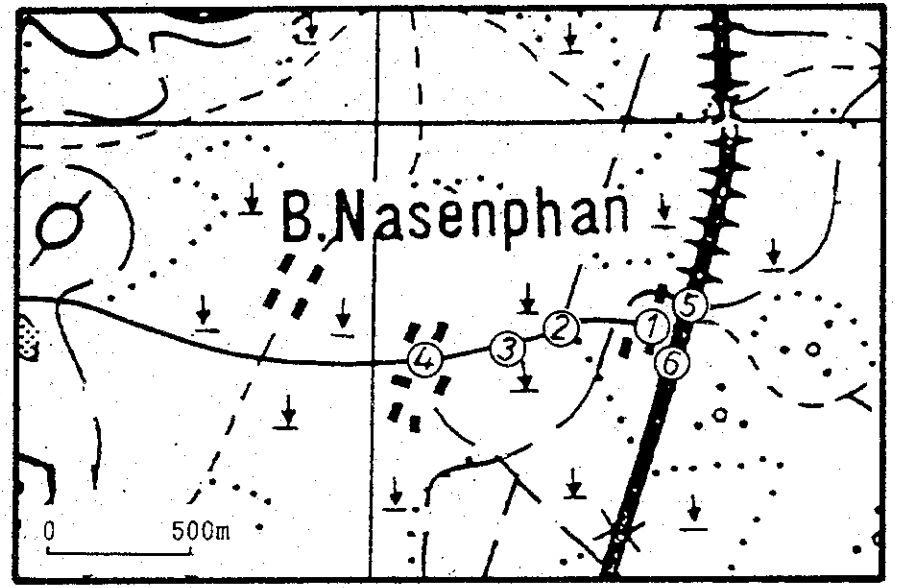

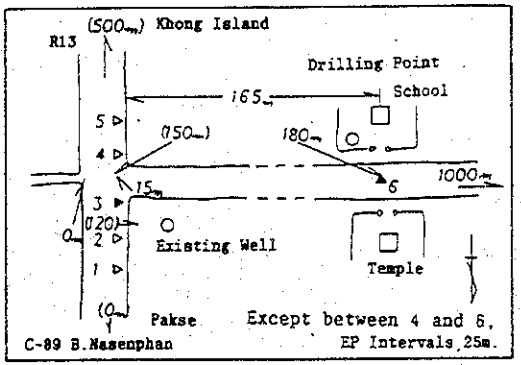

△ E.P.Centre

Figure 3.3.6(20/42)	Filtered Data and Anomaly Indication on VLF method (C 89 B.Nasenphan)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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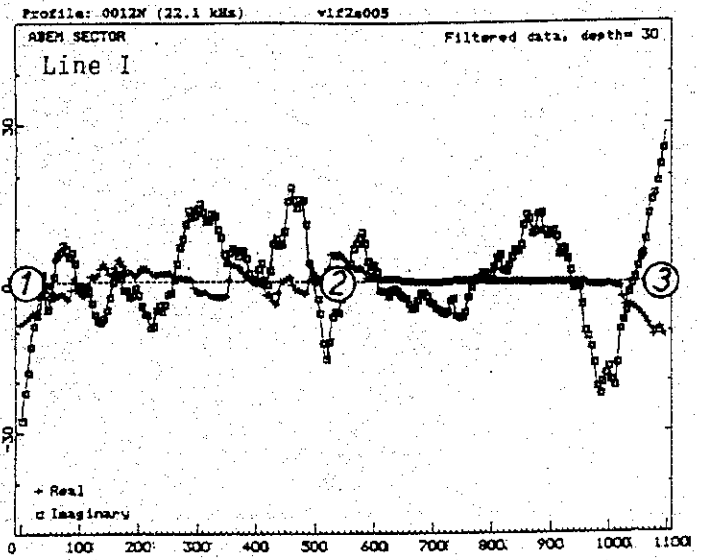
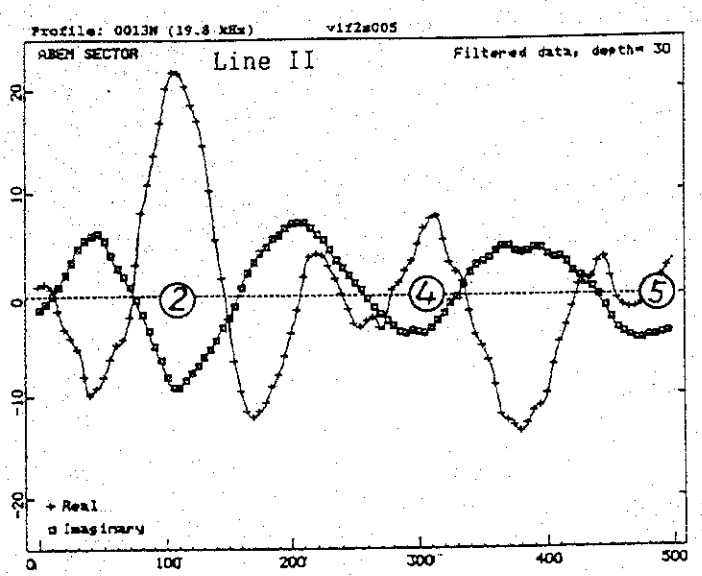
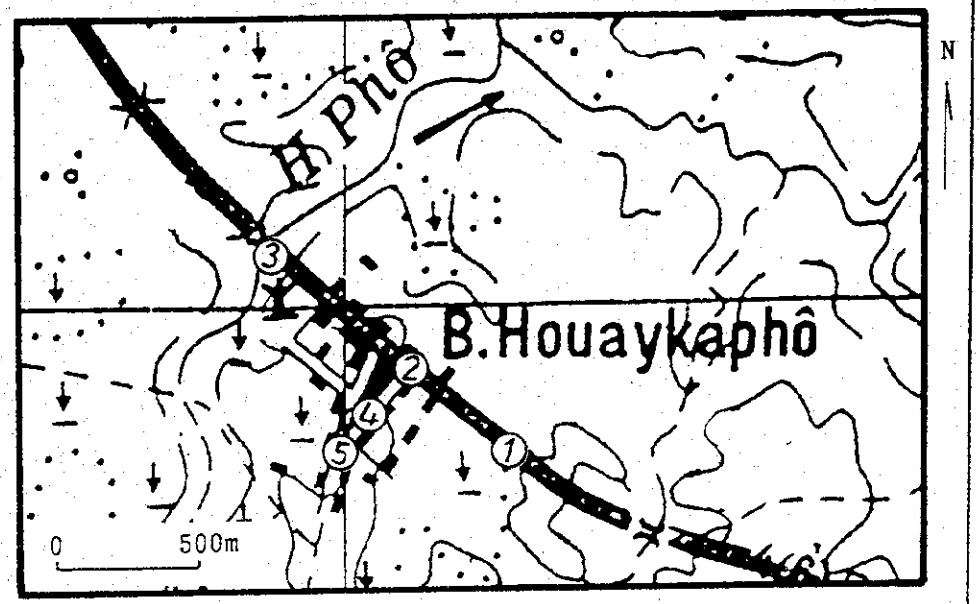
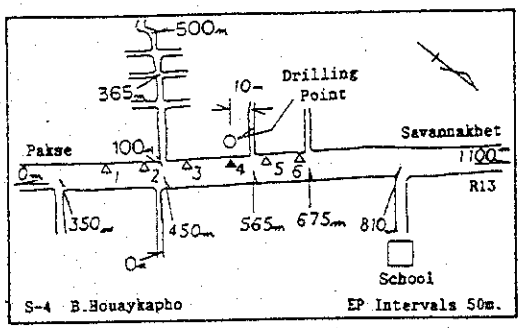






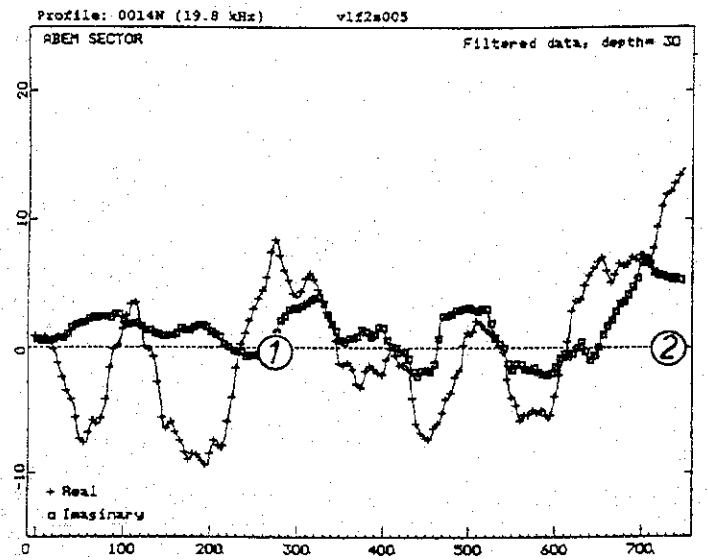


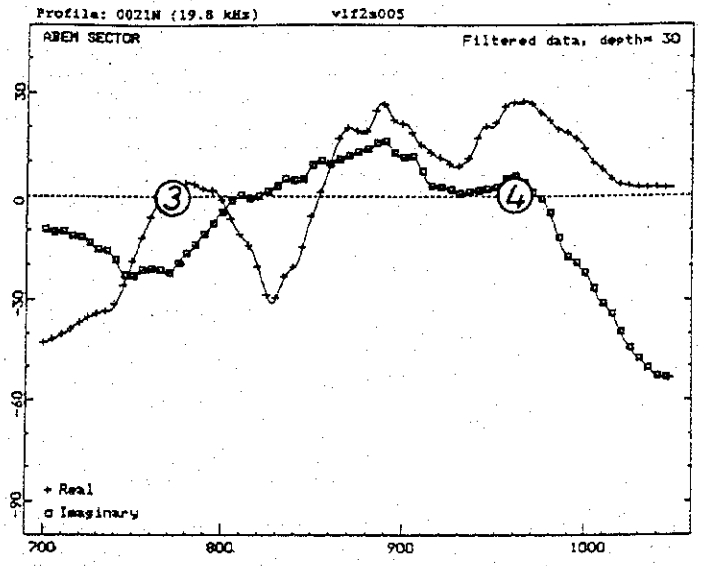
△ E.P.Centre

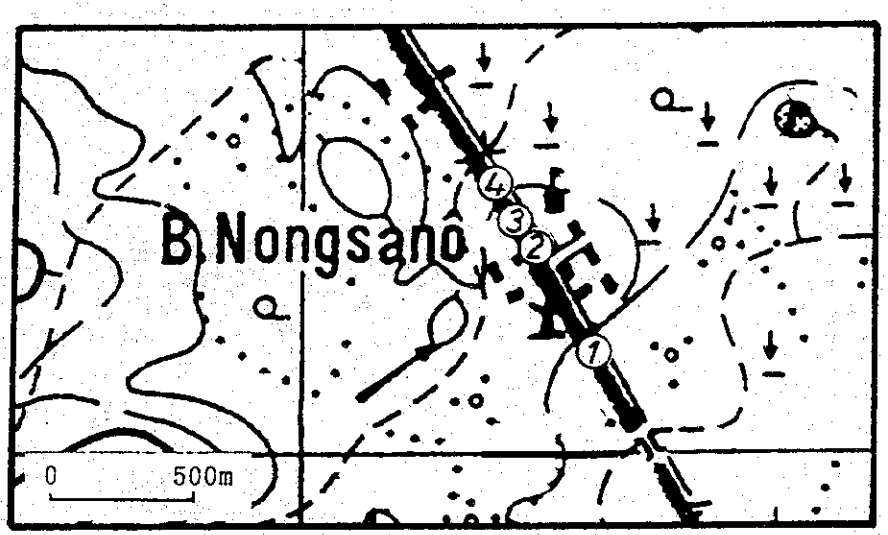
Figure 3.3.6(21/42)	Filtered Data and Anomaly Indication on VLF method (S 4 B.Houaykapho)

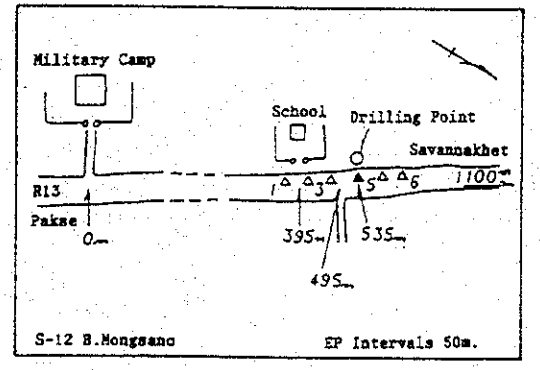
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







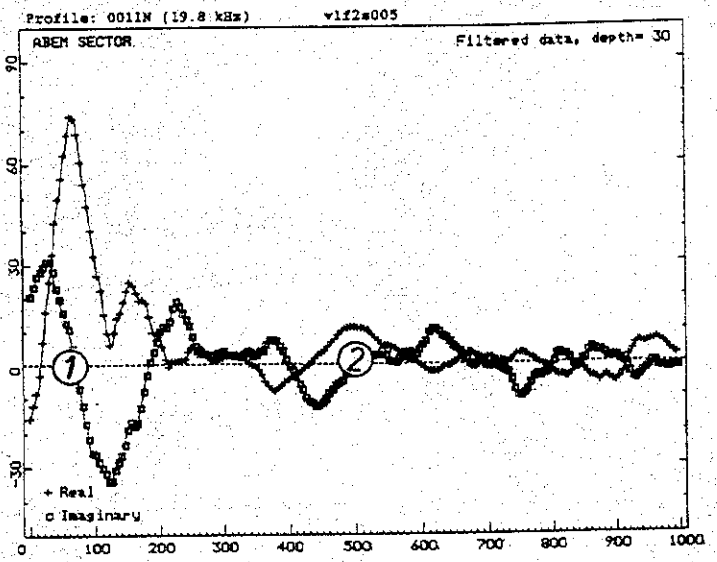


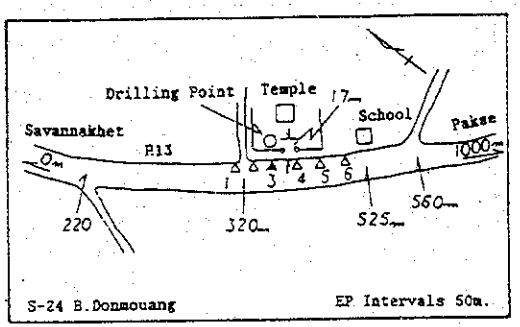
△ E.P.
Centre

Figure 3.3.6(22/42)	Filtered Data and Anomaly Indication on VLF method (S 12 B.Nongsano)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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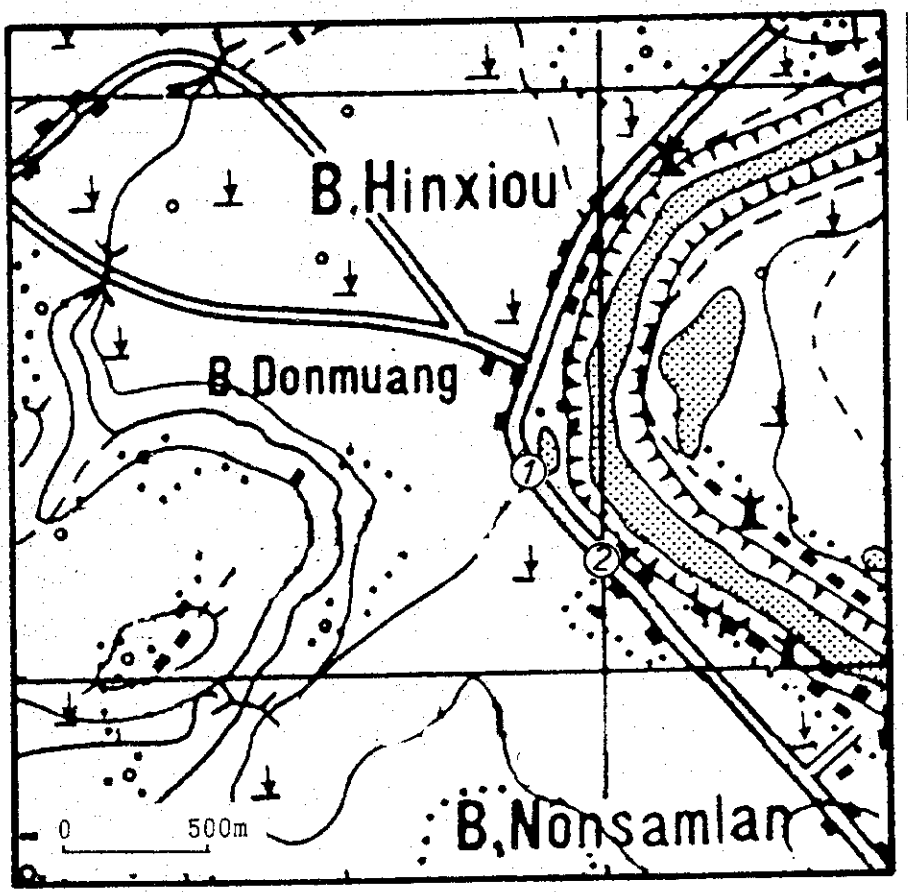

Figure 3.3.6(23/42)	Filtered Data and Anomaly Indication on VLF method (S 24 B.Donmouang)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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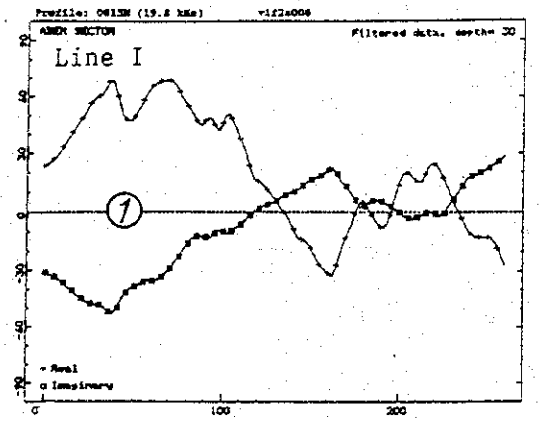
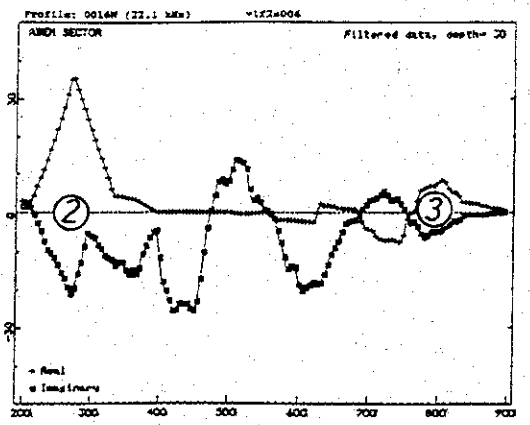
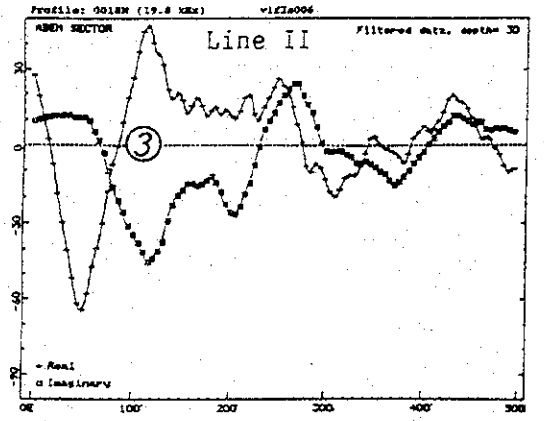
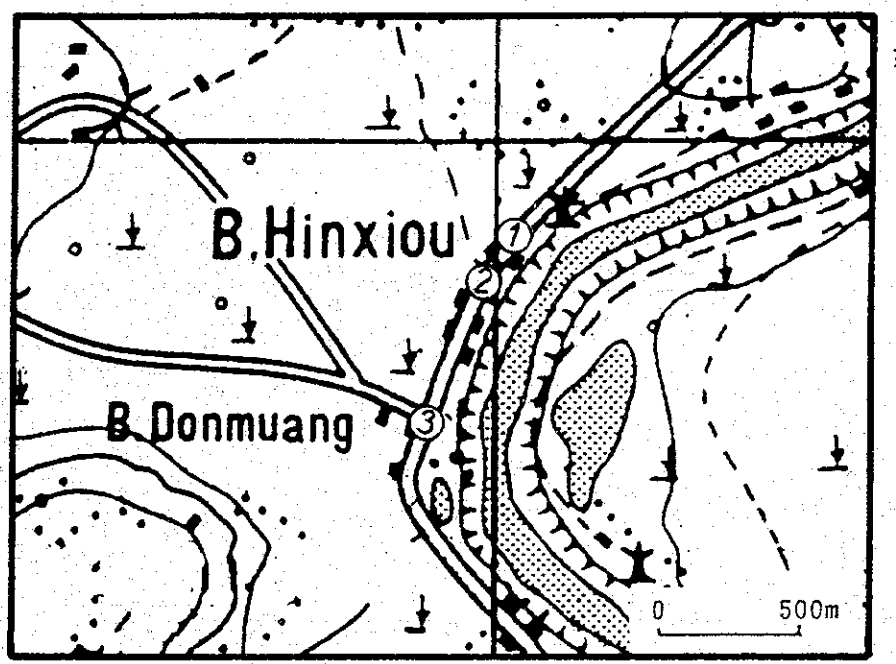
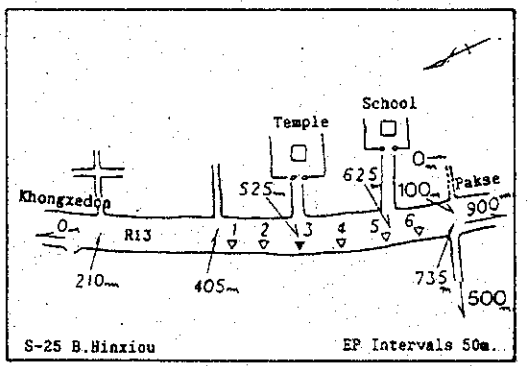








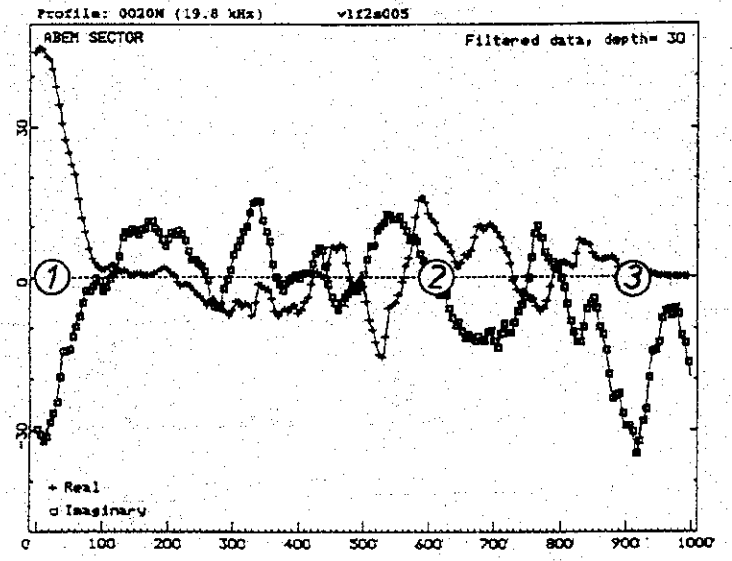


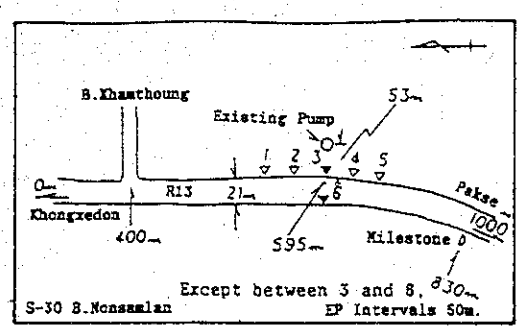
△ E.P.Centre

Figure 3.3.6(24/42)	Filtered Data and Anomaly Indication on VLF method (S 25 B.Hinxiou)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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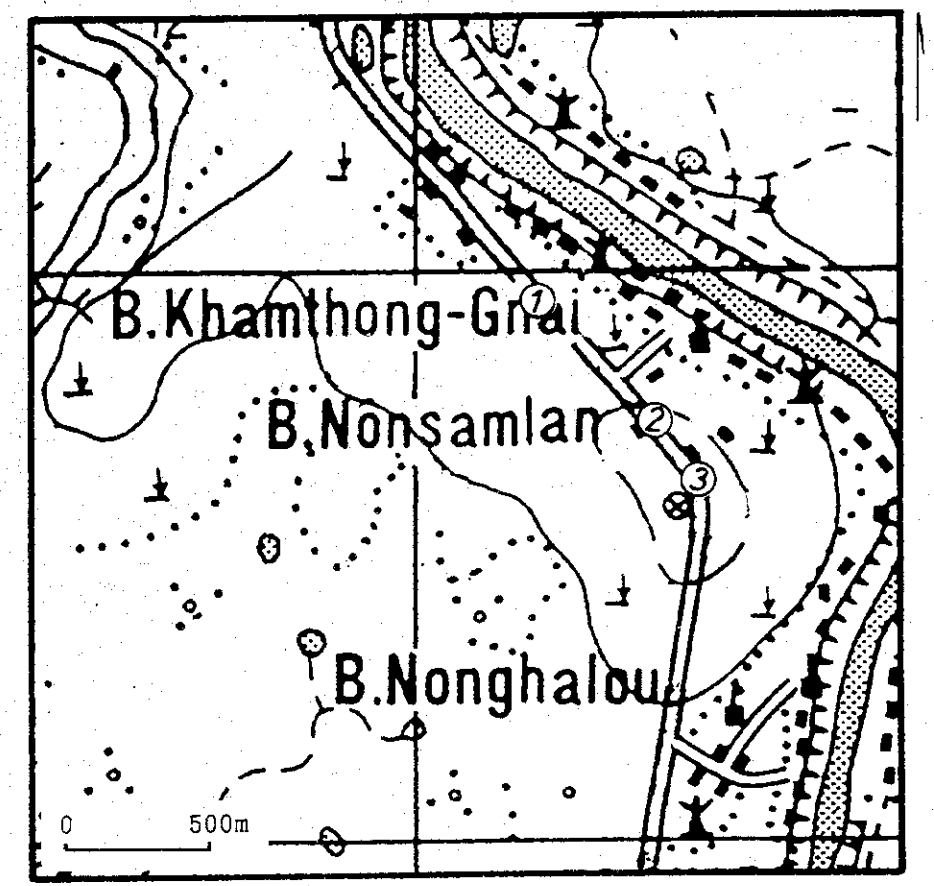
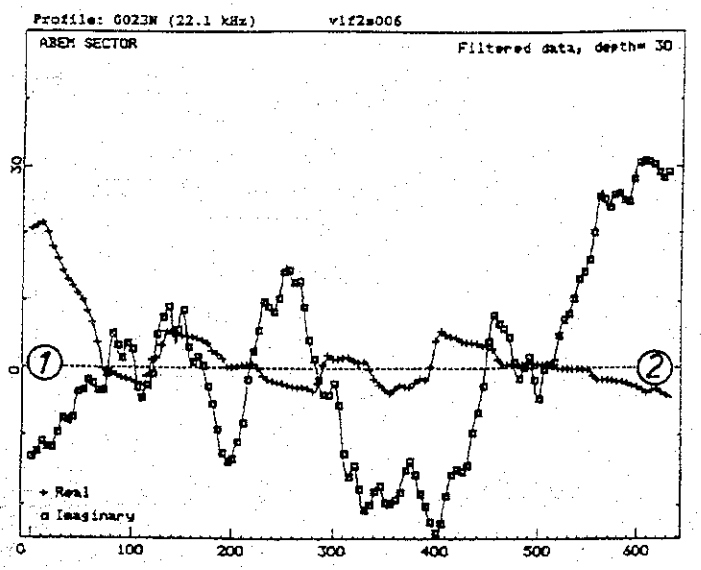
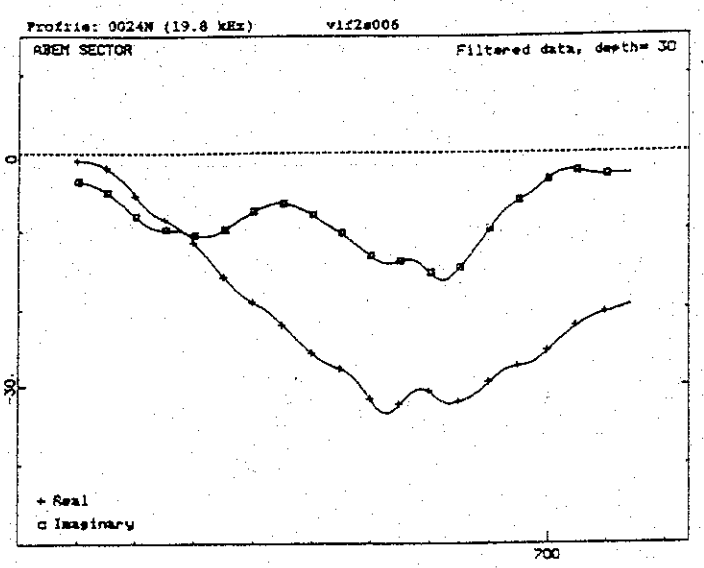


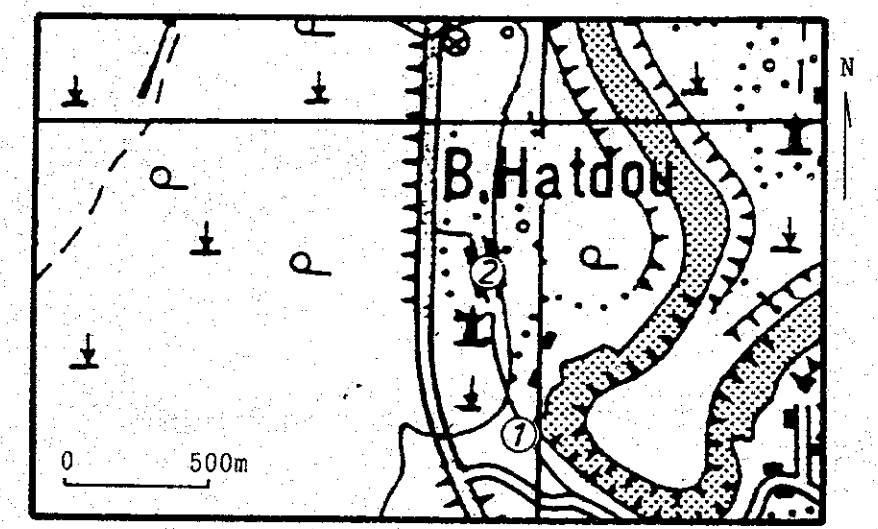
Figure 3.3.6(25/42)	Filtered Data and Anomaly Indication on VLF method (S 30 B.Nonsamlan)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







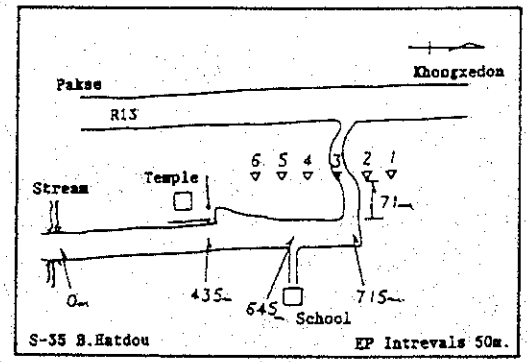


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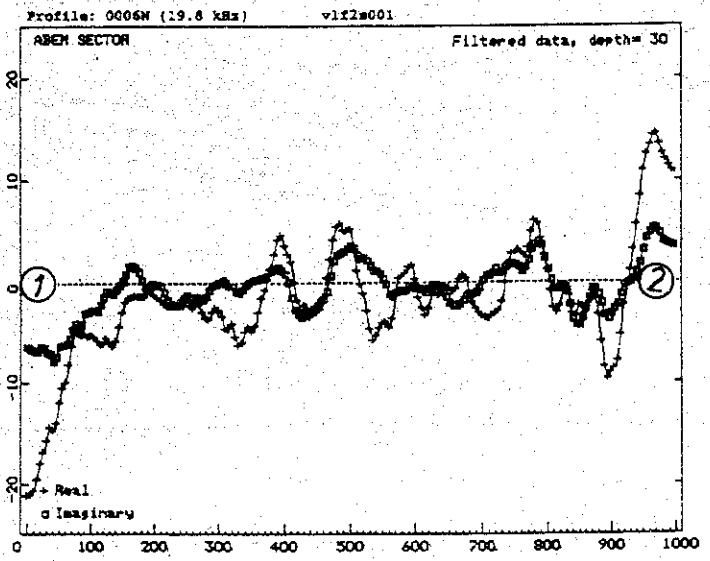
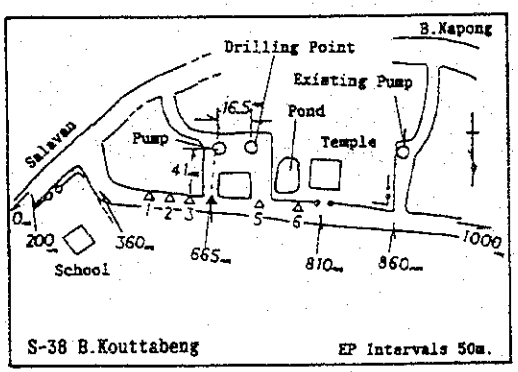
Figure 3.3.6(26/42)	Filtered Data and Anomaly Indication on VLF method (S 35 B.Hatdou)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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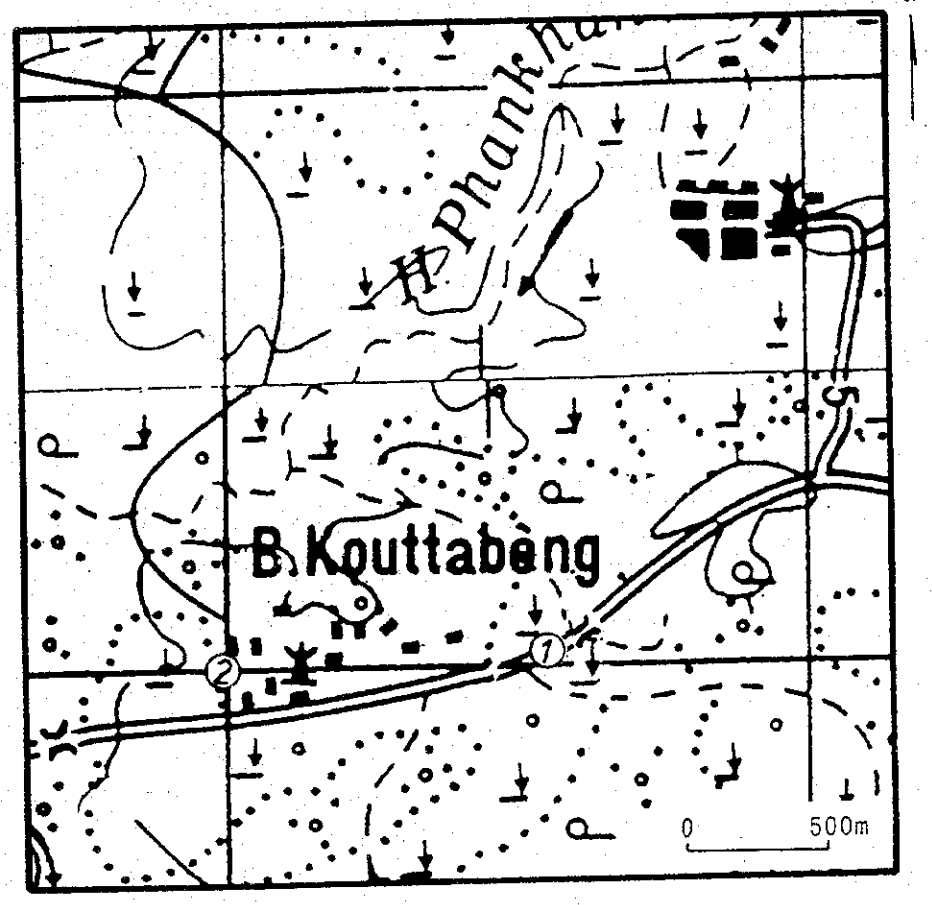
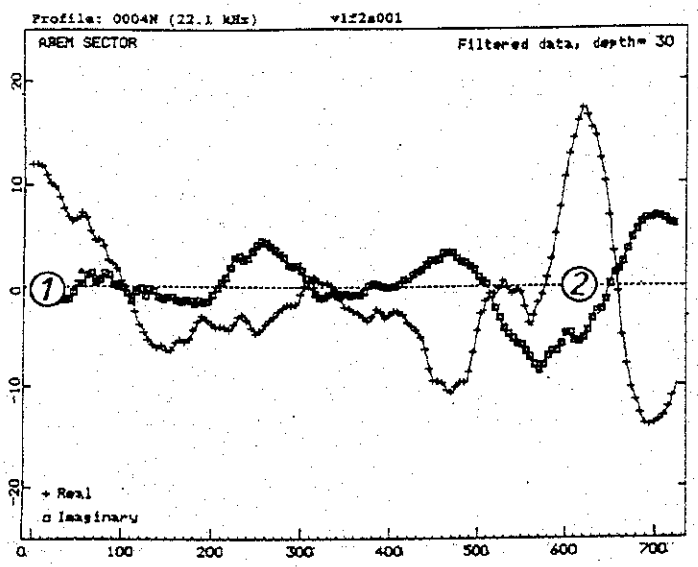
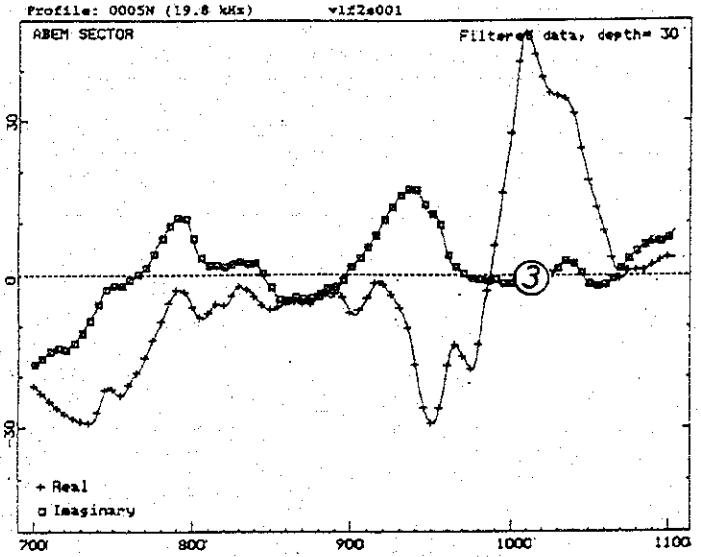
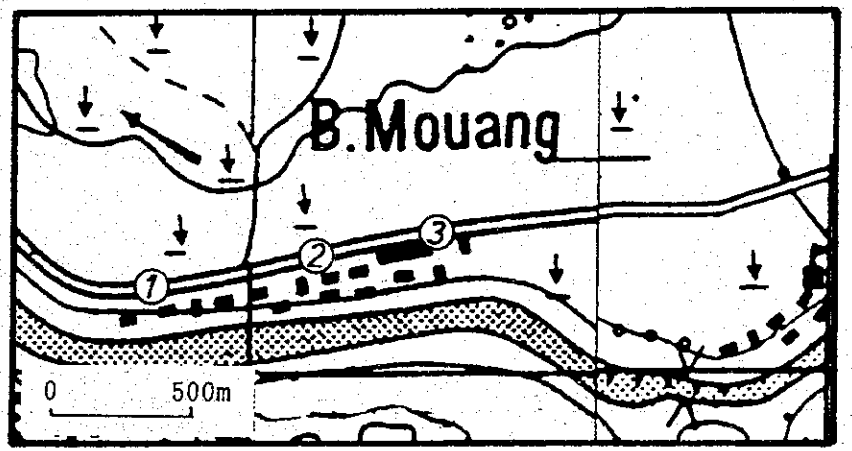
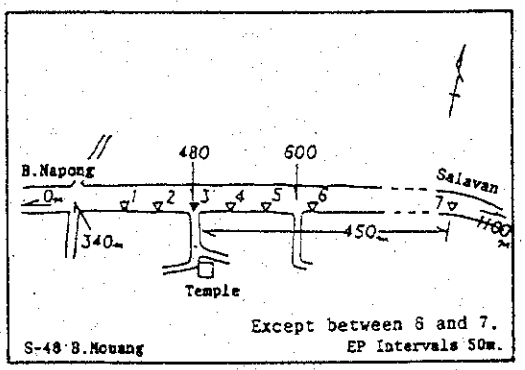


Figure 3.3.6(27/42)	Filtered Data and Anomaly Indication on VLF method (S 38 B.Kouttabeng)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







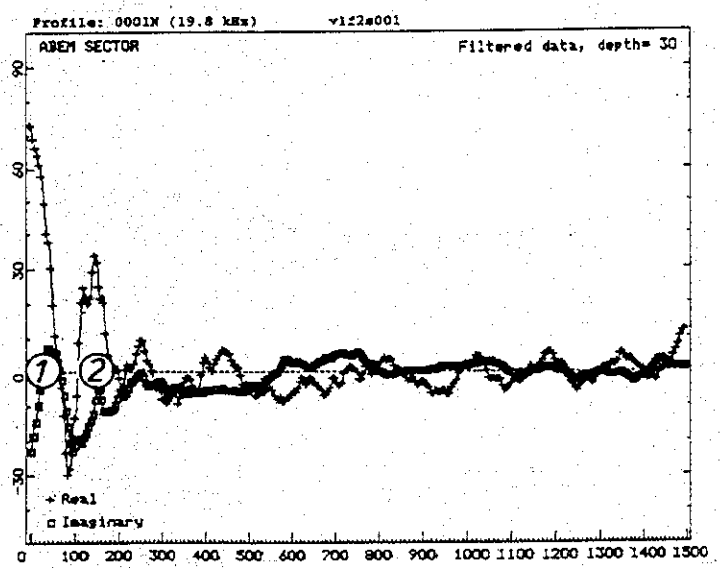


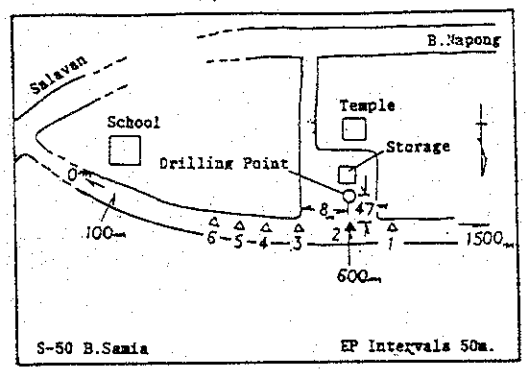
△ E.P.Centre

Figure 3.3.6(28/42)	Filtered Data and Anomaly Indication on VLF method (S 48 B.Mouang)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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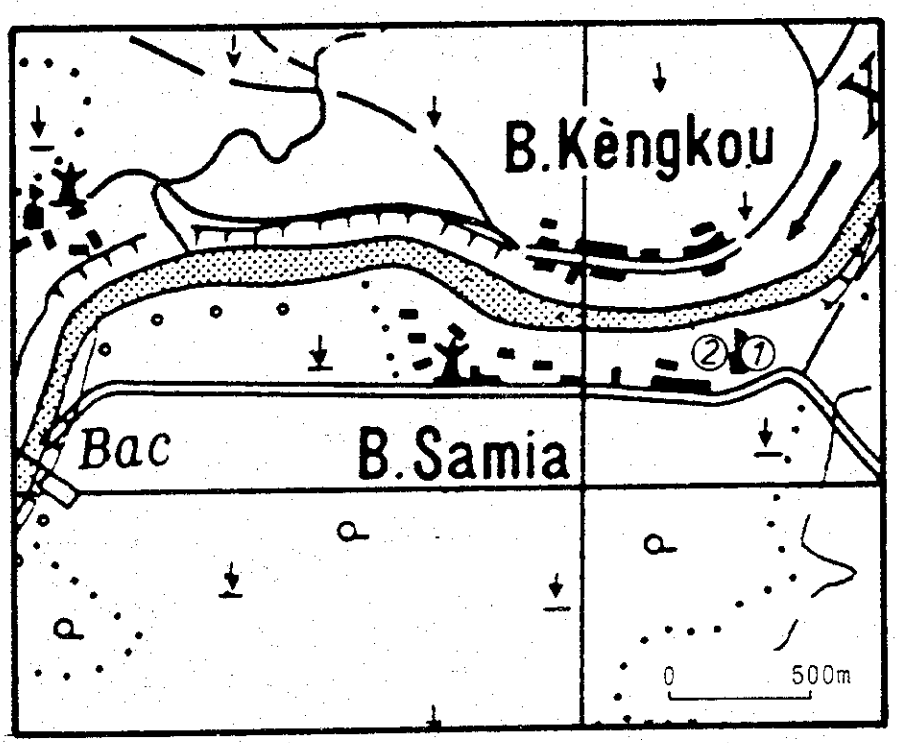
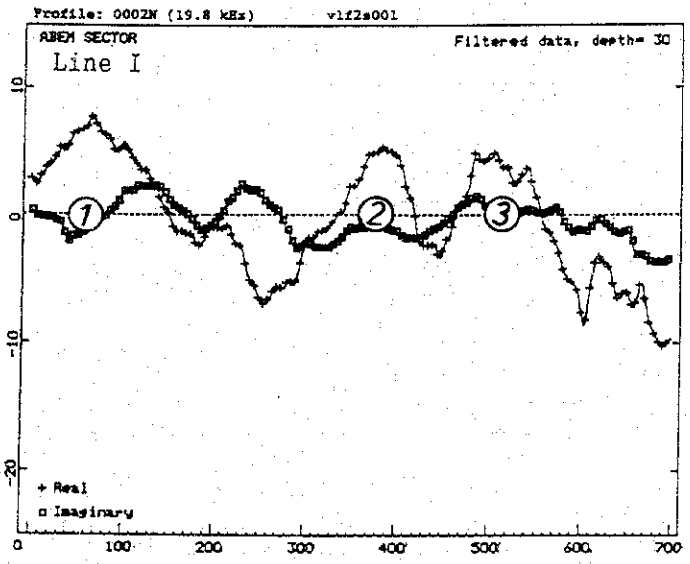
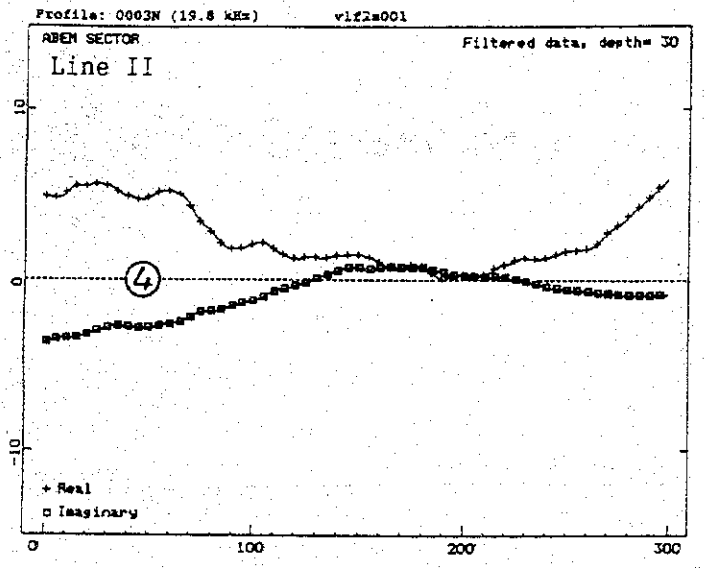


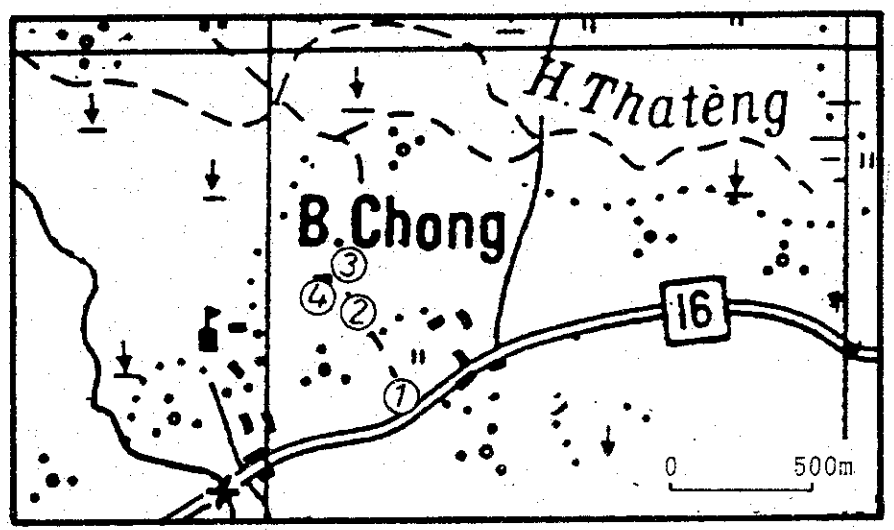
Figure 3.3.6(29/42)	Filtered Data and Anomaly Indication on VLF method (S 50 B.Samia)

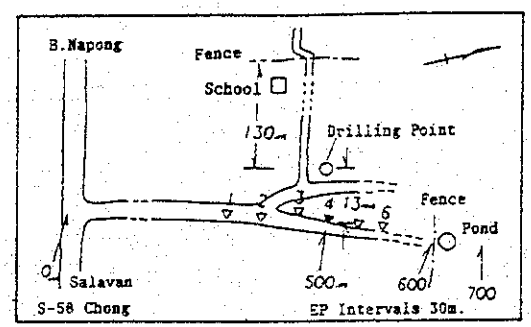
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.



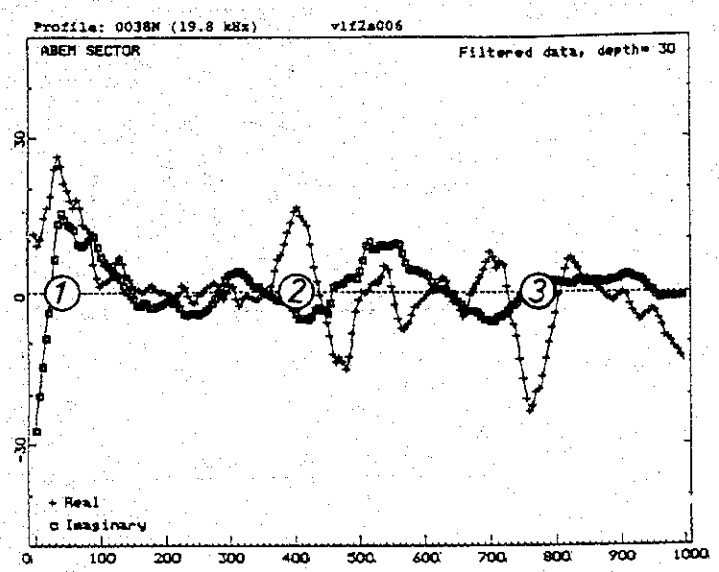


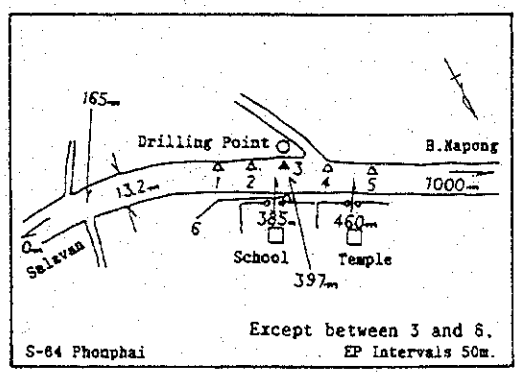




△ E.P.Centre

Figure 3.3.6(30/42)	Filtered Data and Anomaly Indication on VLF method (S 56 B.Chong)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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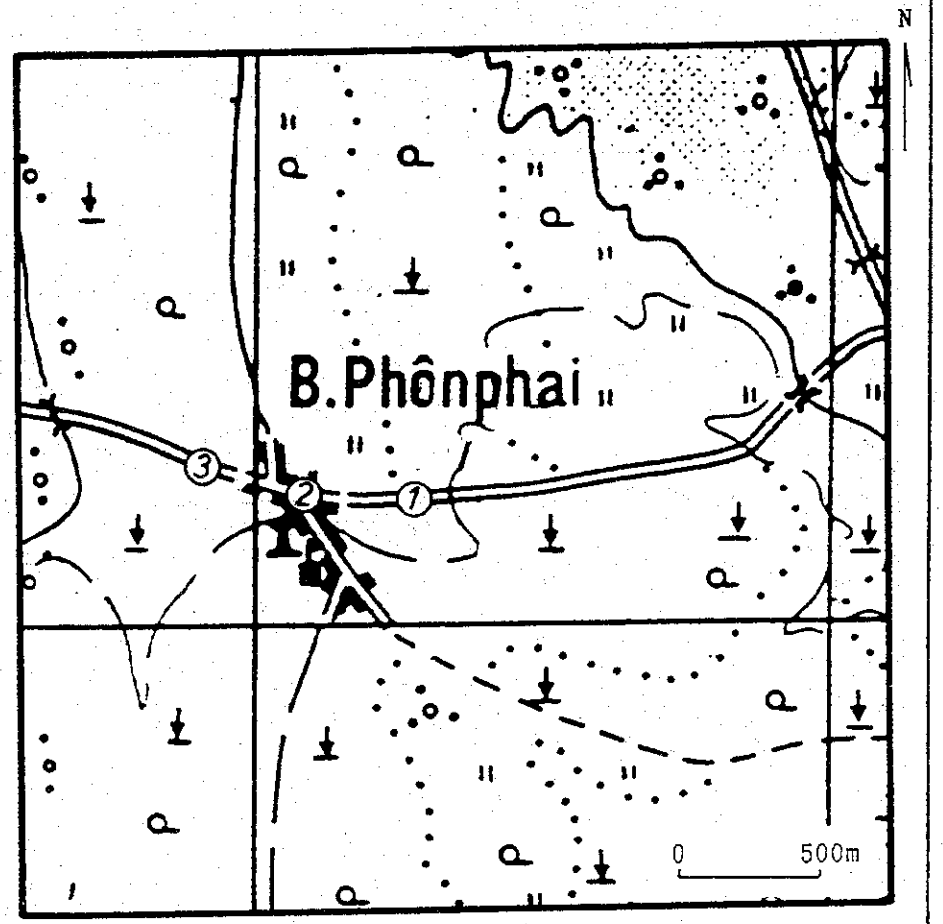
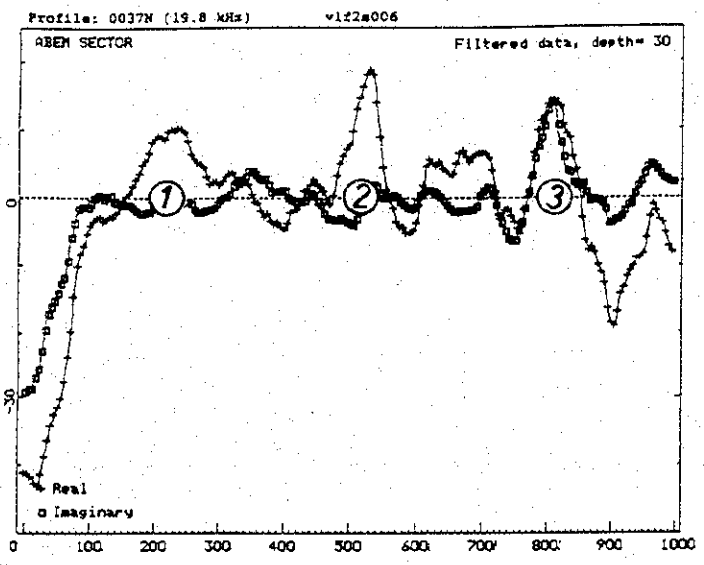
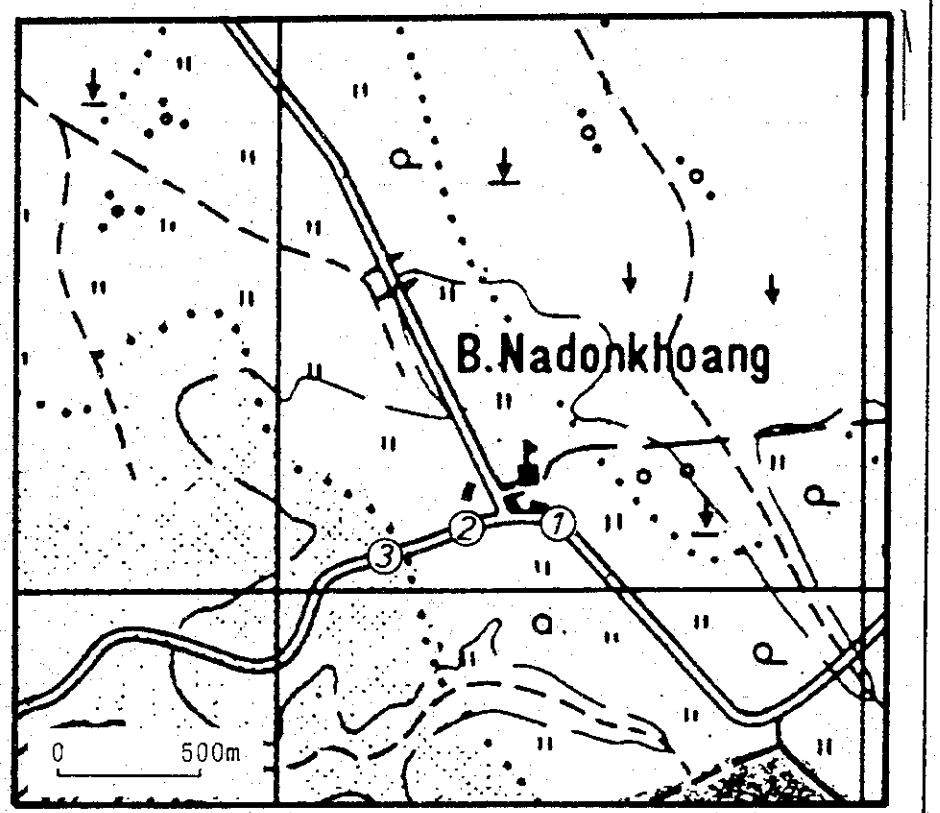
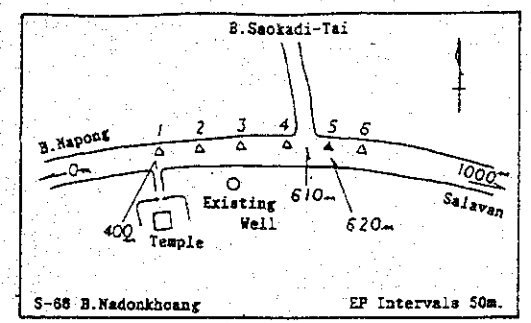


Figure 3.3.6(31/42)	Filtered Data and Anomaly Indication on VLF method (S 64 B.Phonphai)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







△ E.P.Centre

Figure 3.3.6(32/42)	Filtered Data and Anomaly Indication on VLF method (S 66 B.Nadonkhoang)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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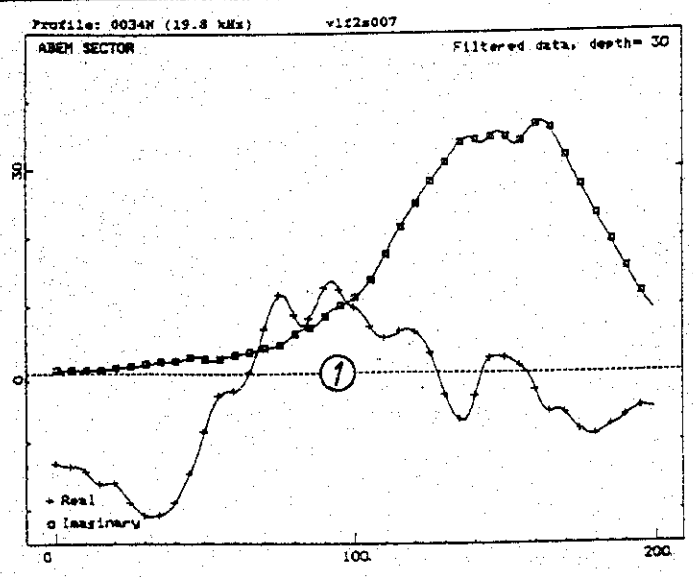
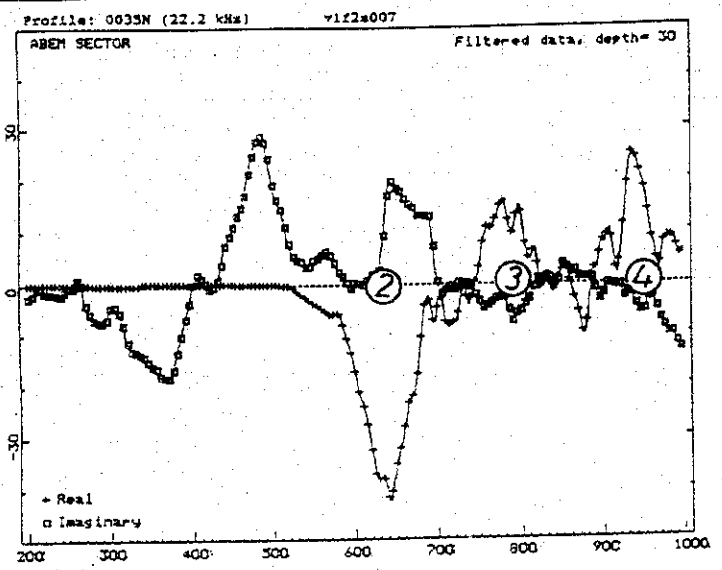
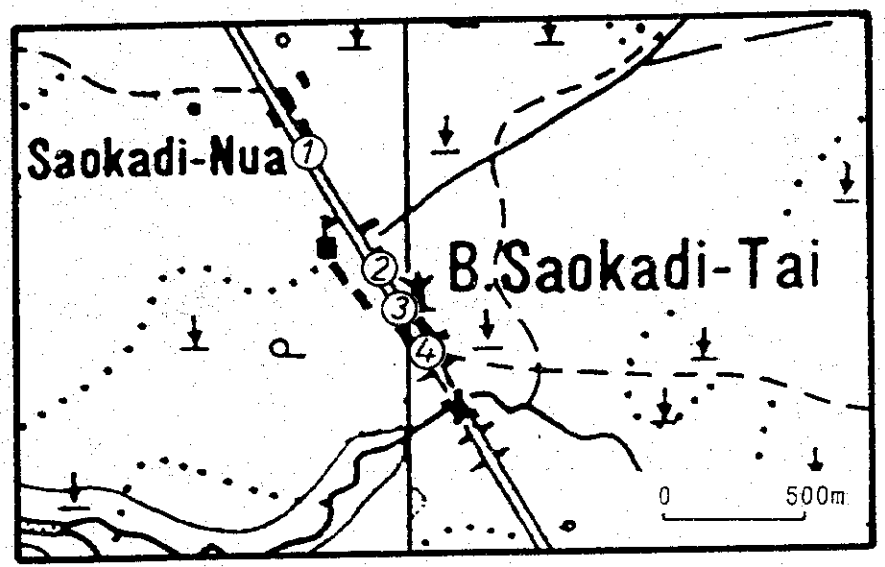
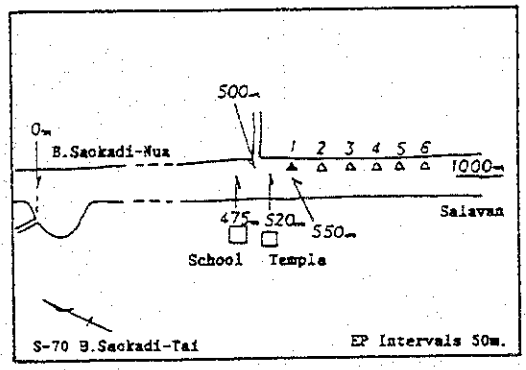
S3-96









△ E.P.Centre

Figure 3.3.6(33/42) Filtered Data and Anomaly Indication on VLF method (S 70 B.Saokadi-Tai)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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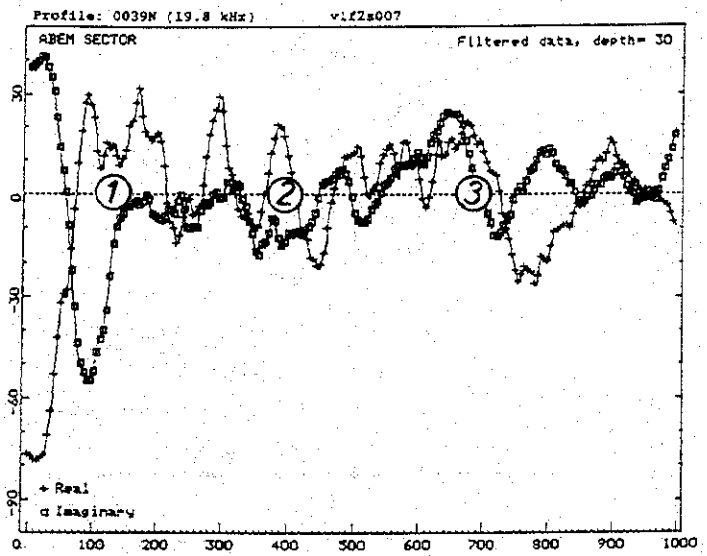

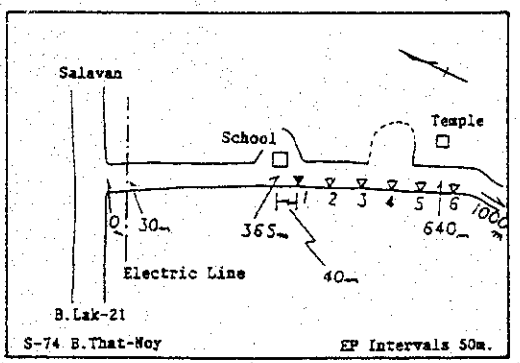

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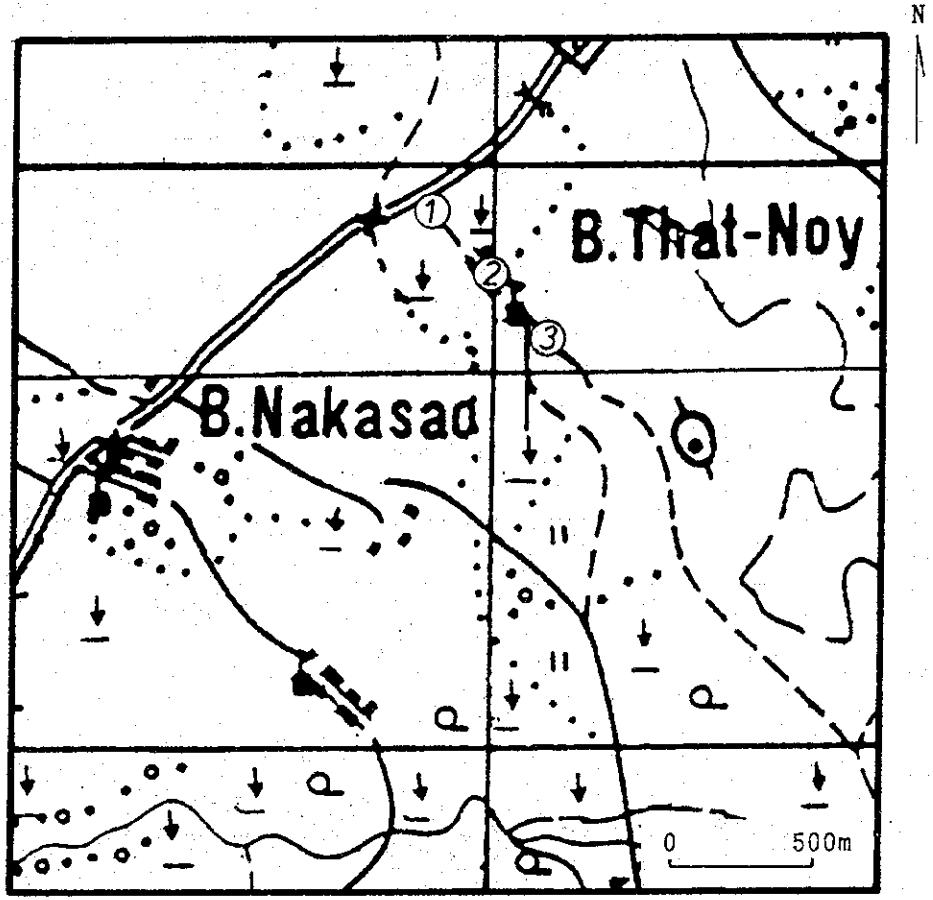

Figure 3.3.6(34/42)	Filtered Data and Anomaly Indication on VLF method (S 74 B.That-Noy)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
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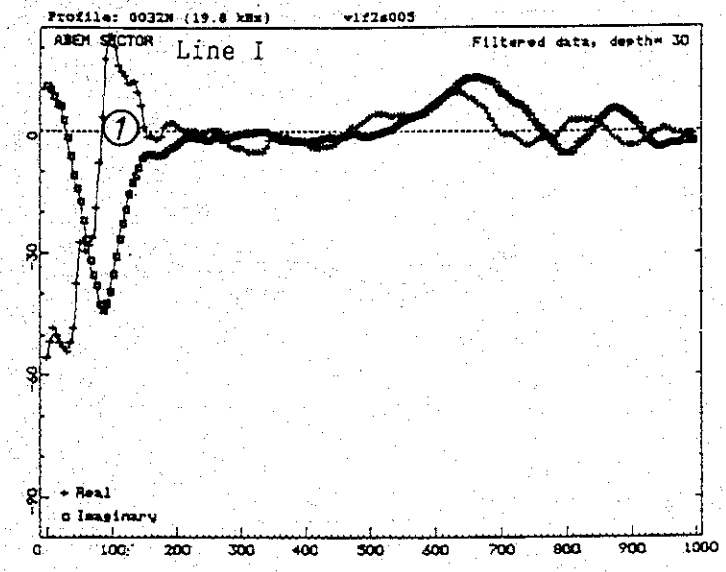
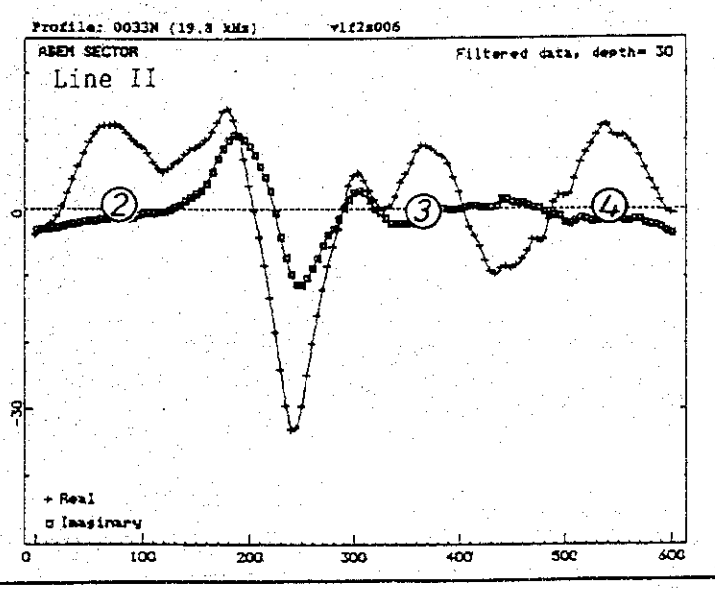
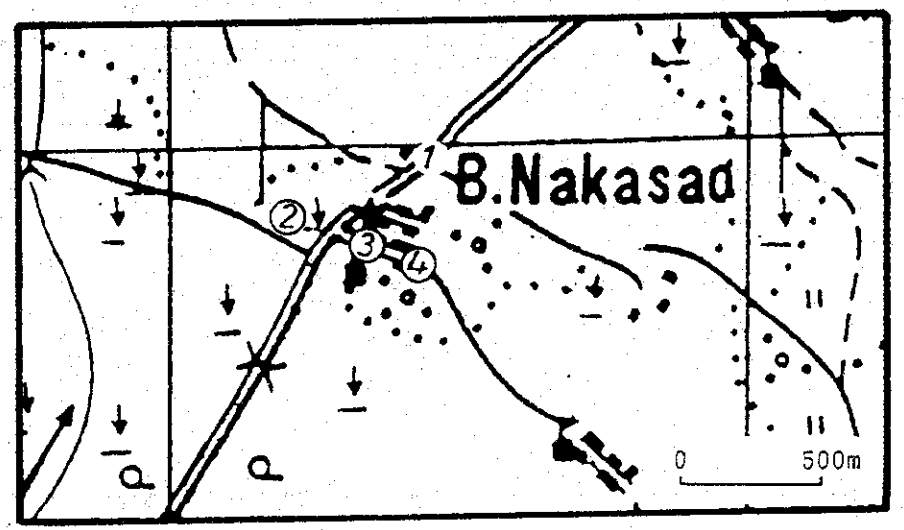
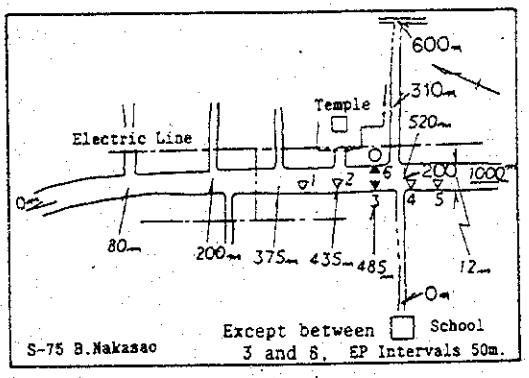
S3-98









△ E.P.Centre

Figure 3.3.6(35/42)	Filtered Data and Anomaly Indication on VLF method (S 75 B.Nakasao)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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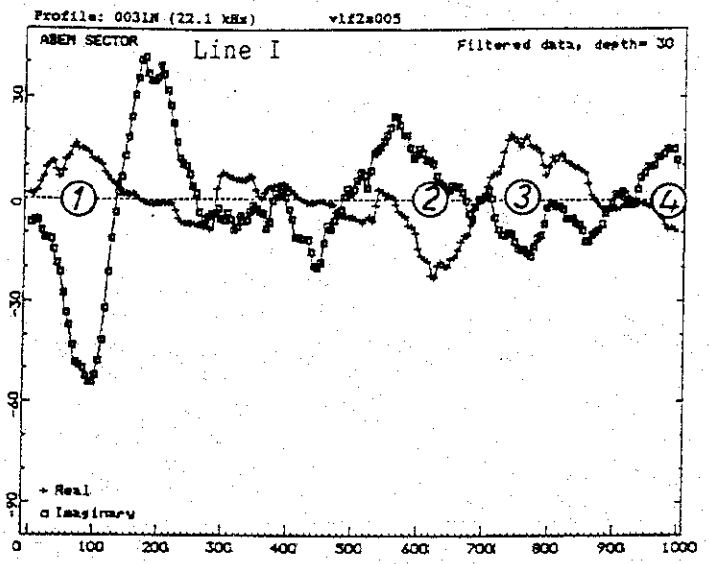
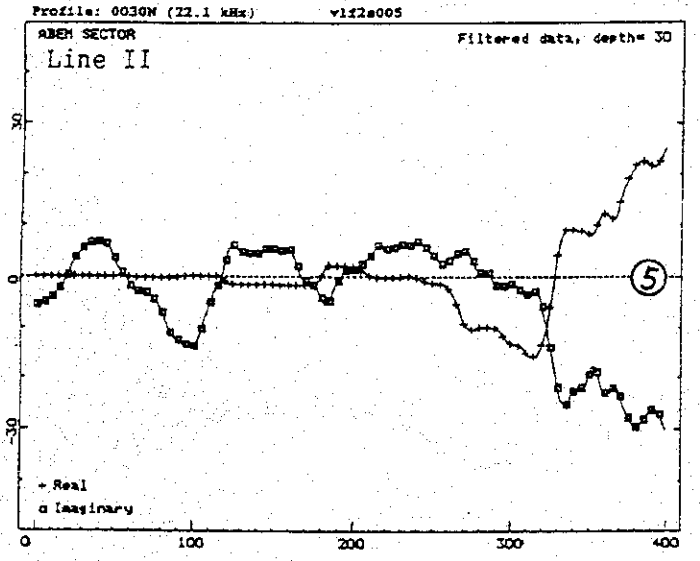
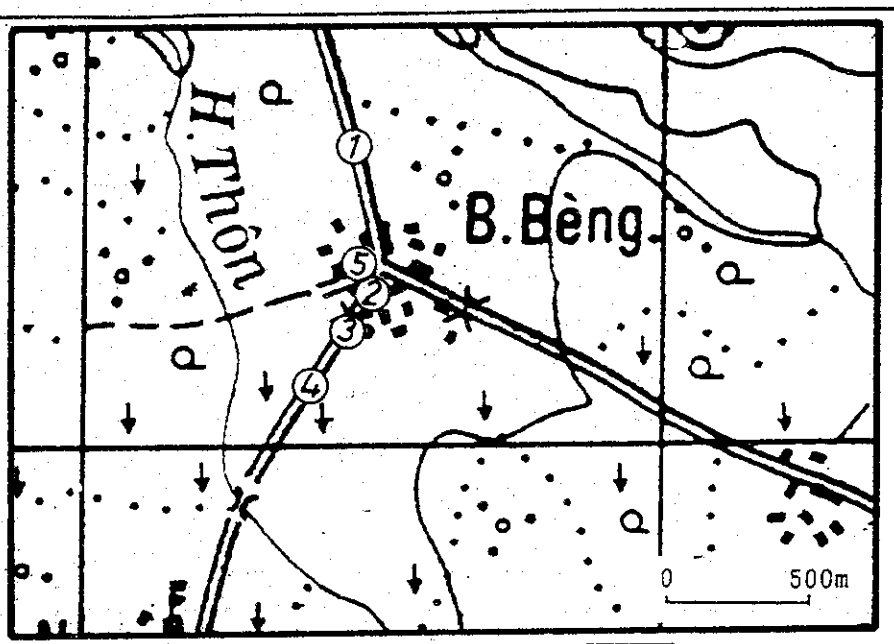
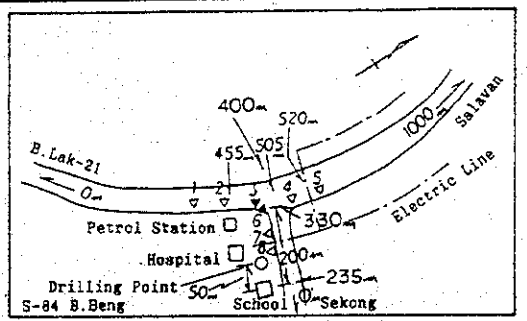




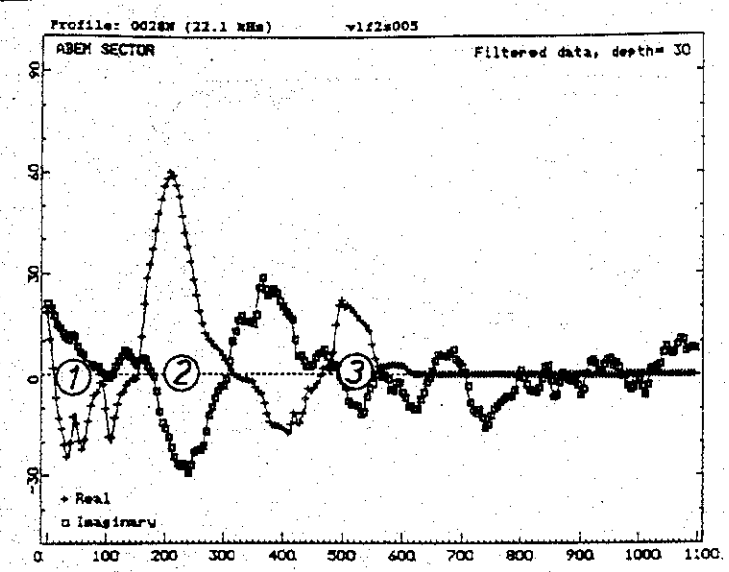


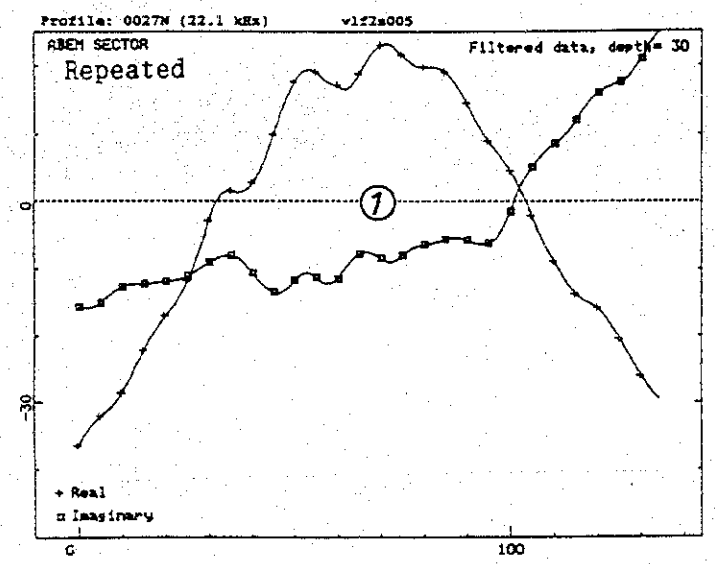


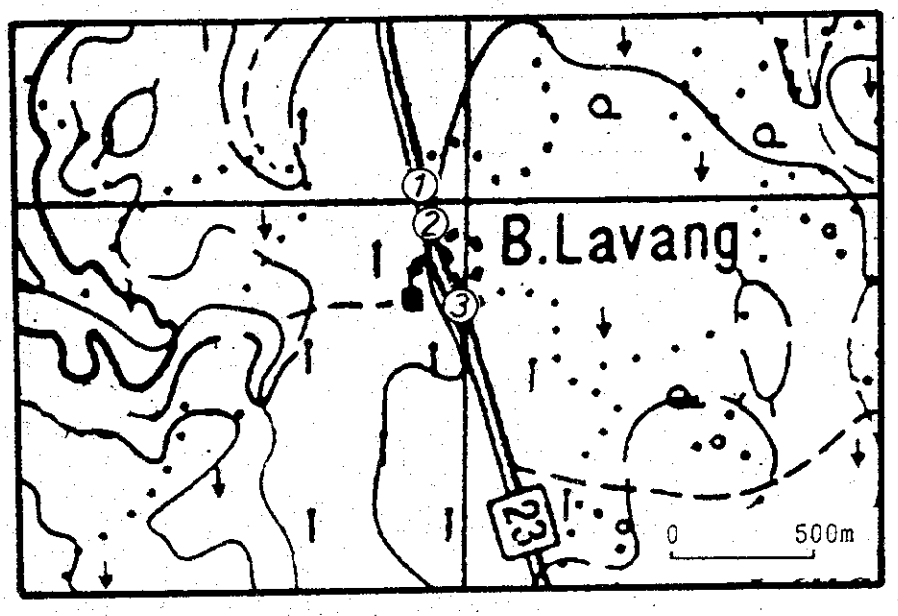
△ E.P.Centre

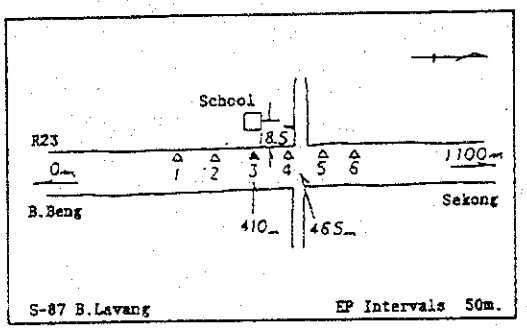
EP Intervals 50m between 1 to 2, 2 to 3 and 4 to 5, but between 3 to 4, 3(6) to 7 and 7 to 8 is 25m.

Figure 3.3.6(36/42)	Filtered Data and Anomaly Indication on VLF method (S 84 B.Beng)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







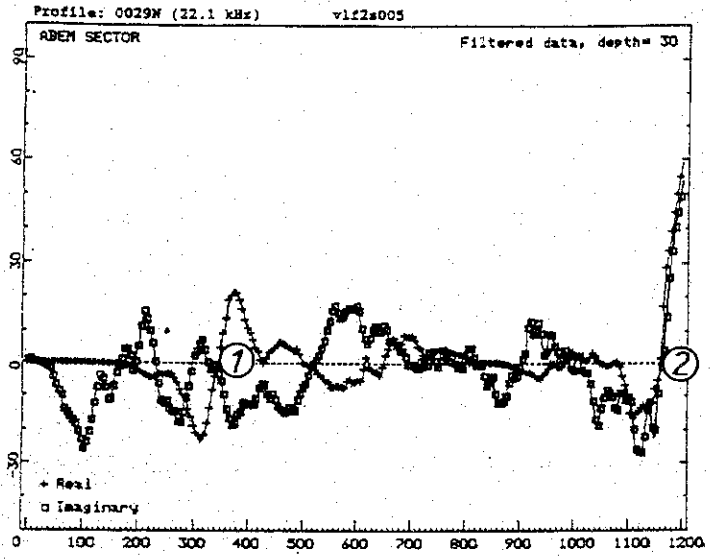


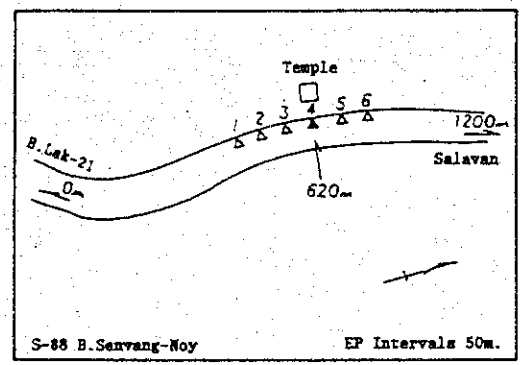
△ E.P.Centre

Figure 3.3.6(37/42)	Filtered Data and Anomaly Indication on VLF method (S 87 B.Lavang)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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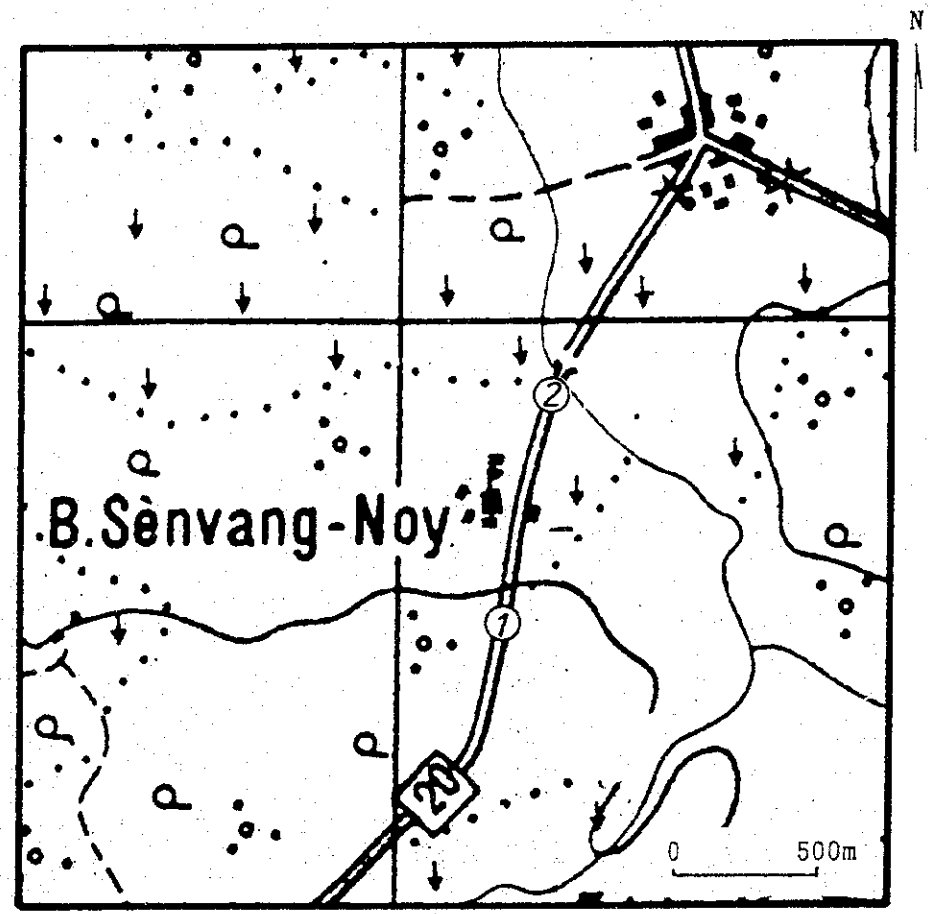
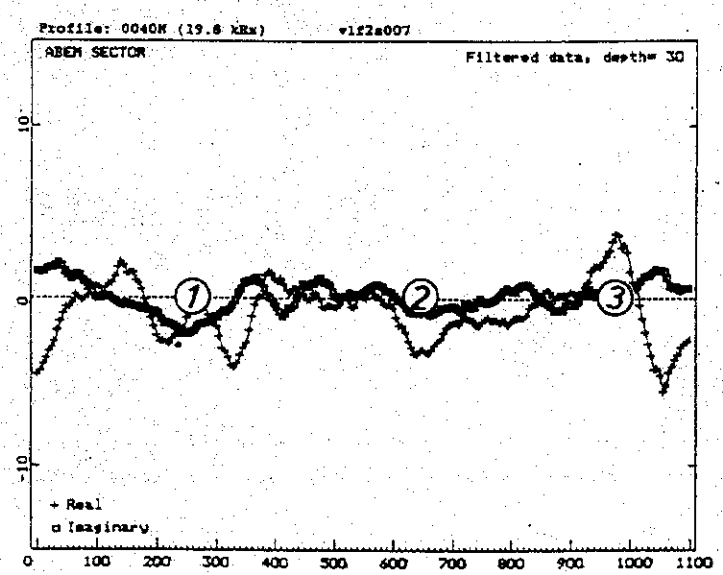
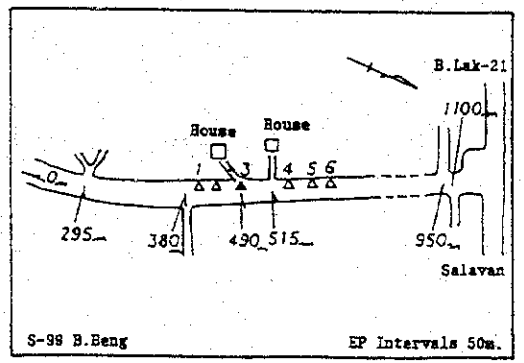


Figure 3.3.6(38/42)	Filtered Data and Anomaly Indication on VLF method (S 88 B.Senvang-Noy)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)	KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.





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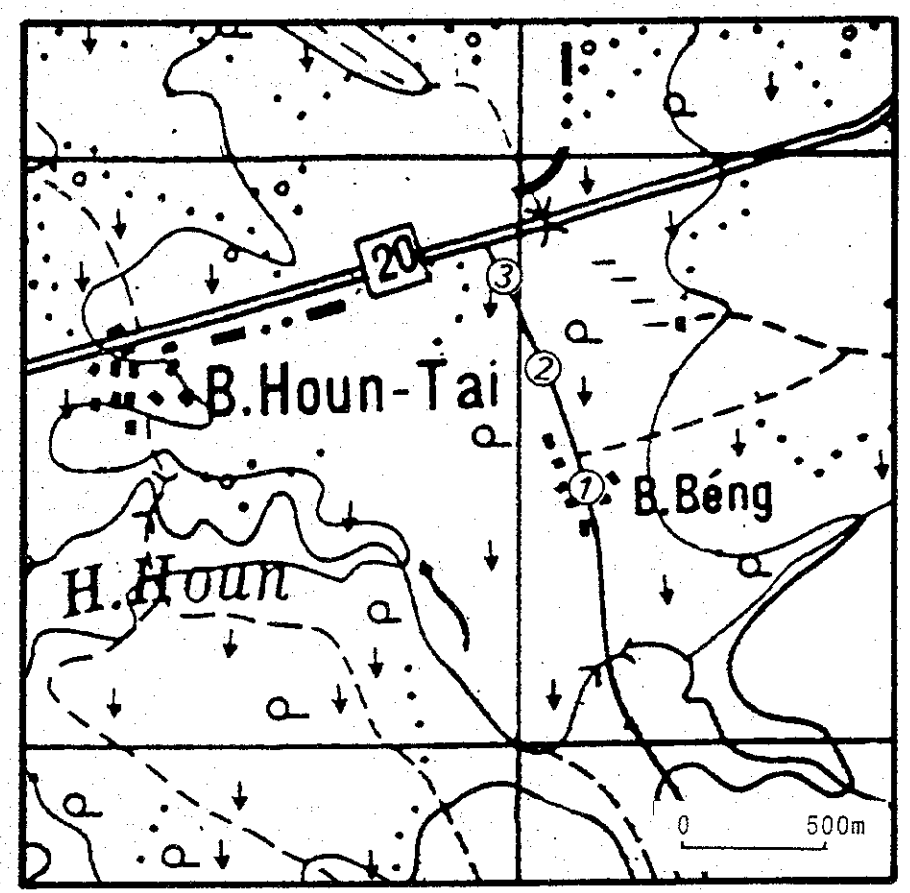
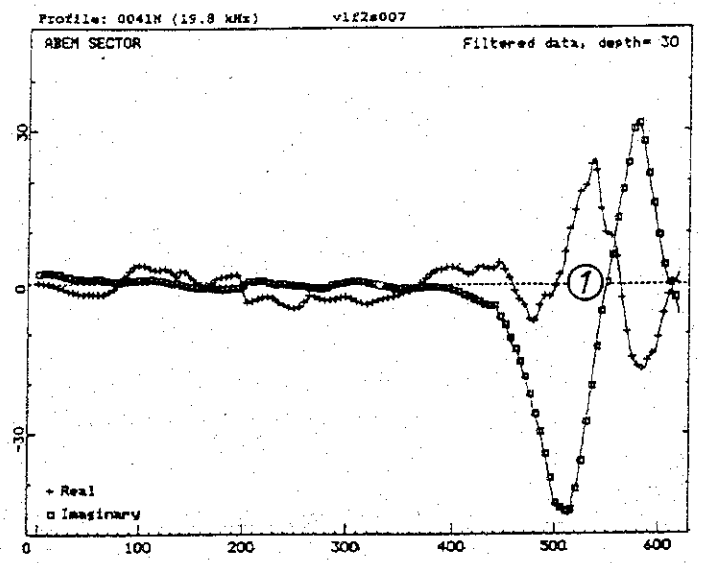
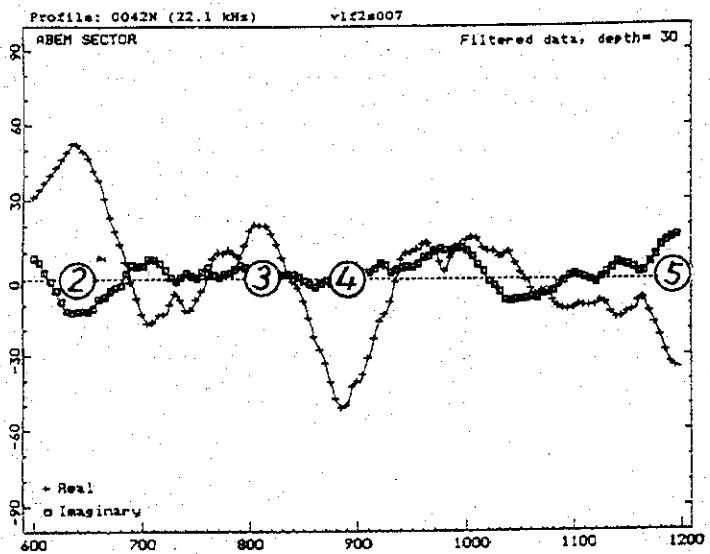


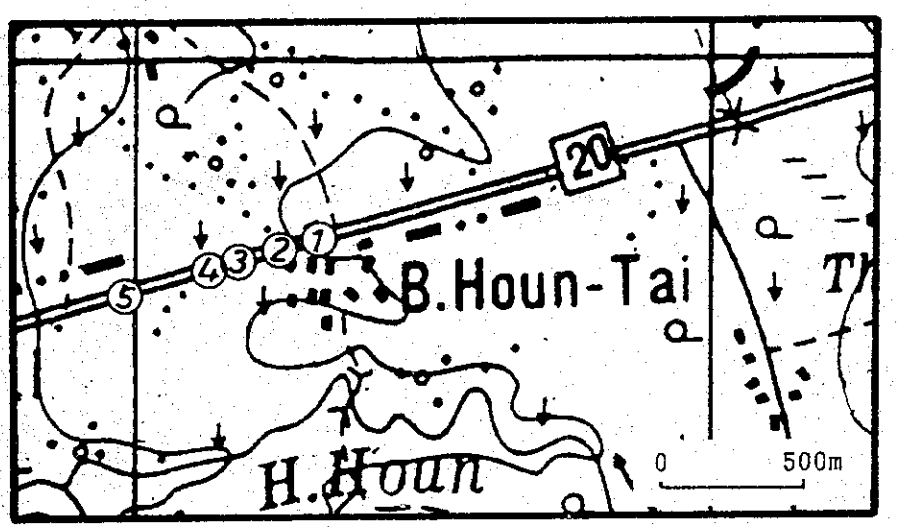
Figure 3.3.6(39/42)	Filtered Data and Anomaly Indication on VLF method (S 99 B.Beng)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







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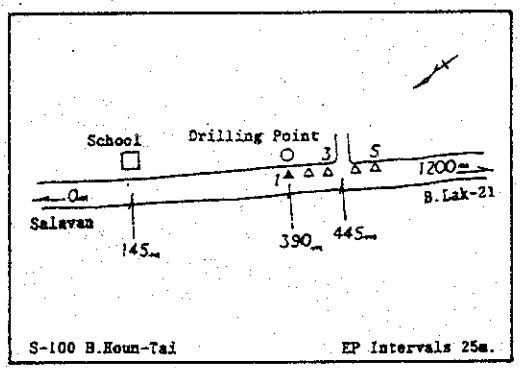
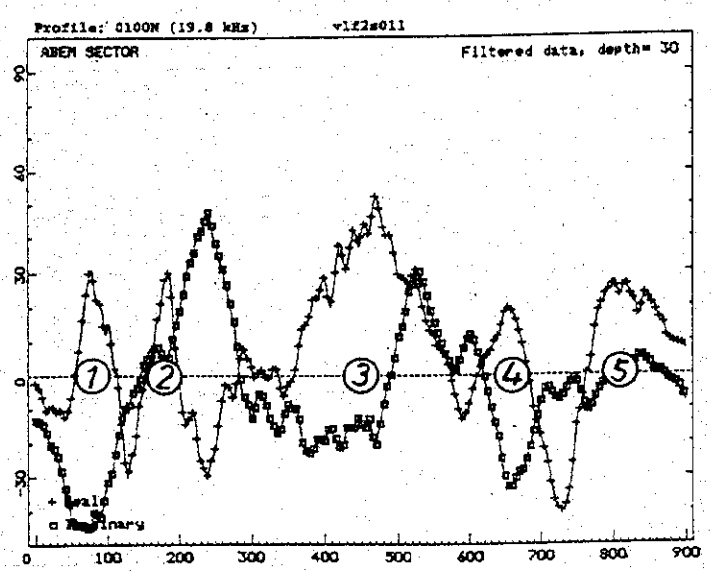


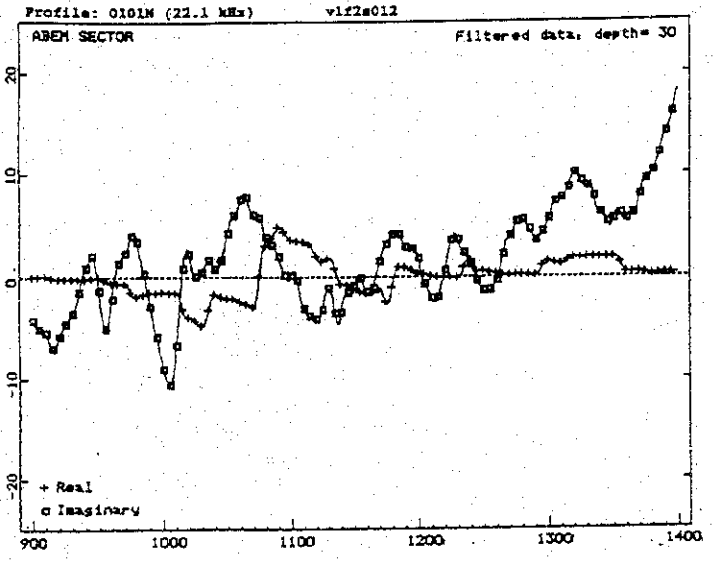
△ E.P.Centre

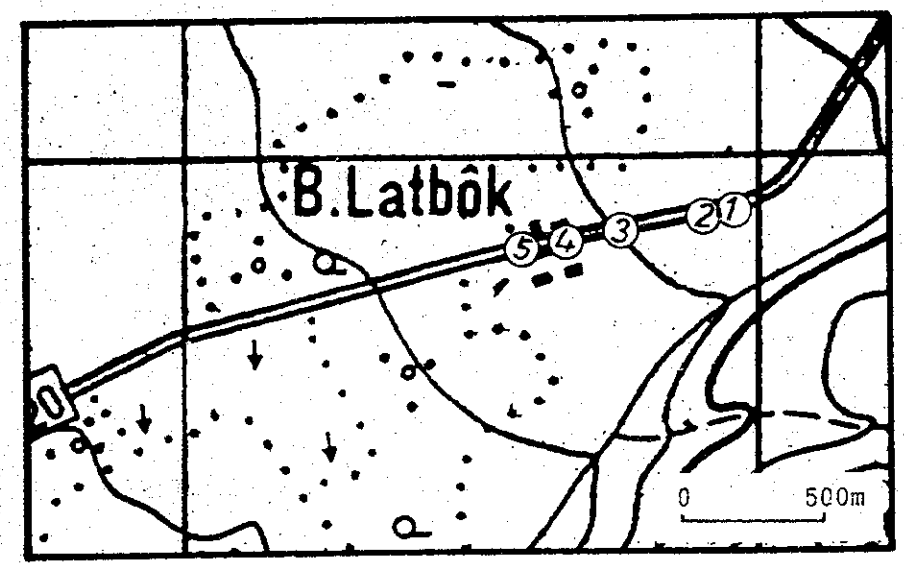
Figure 3.3.6(40/42)	Filtered Data and Anomaly Indication on VLF method (S 100 B.Houn-Tai)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA) | KOKUSAI KOGYO CO.,LTD. CONSTRUCTION PROJECT CONSULTANTS,INC.







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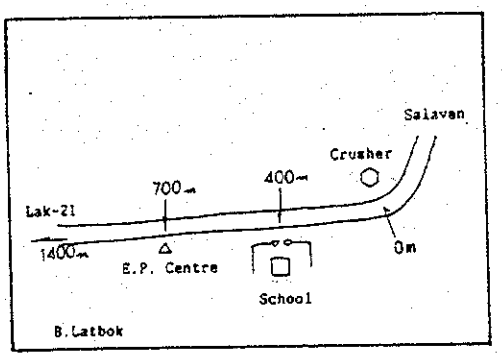

▲ E.P.Centre

Figure 3.3.6(41/42)	Filtered Data and Anomaly Indication on VLF method (E 6 B.Latbok)

THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC

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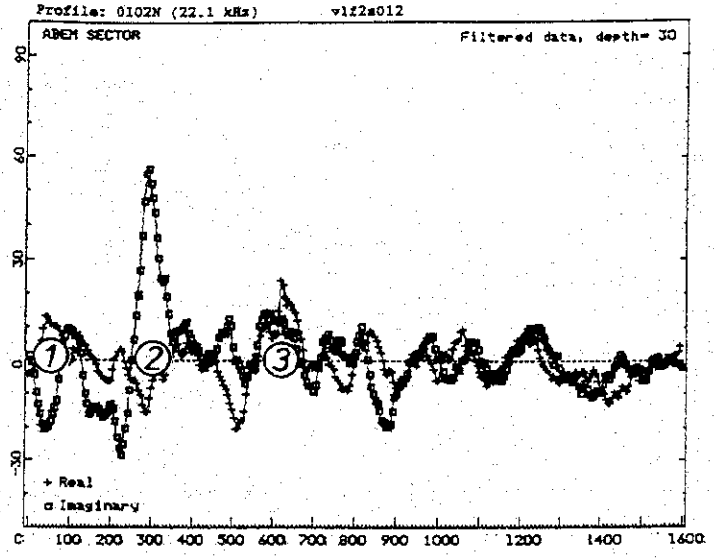

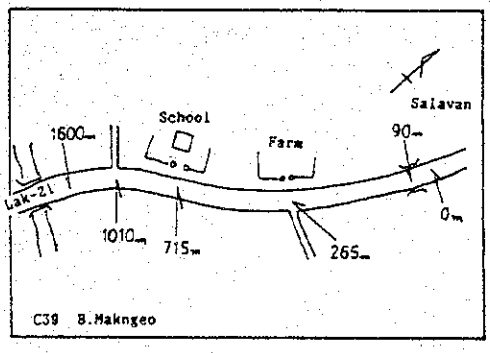

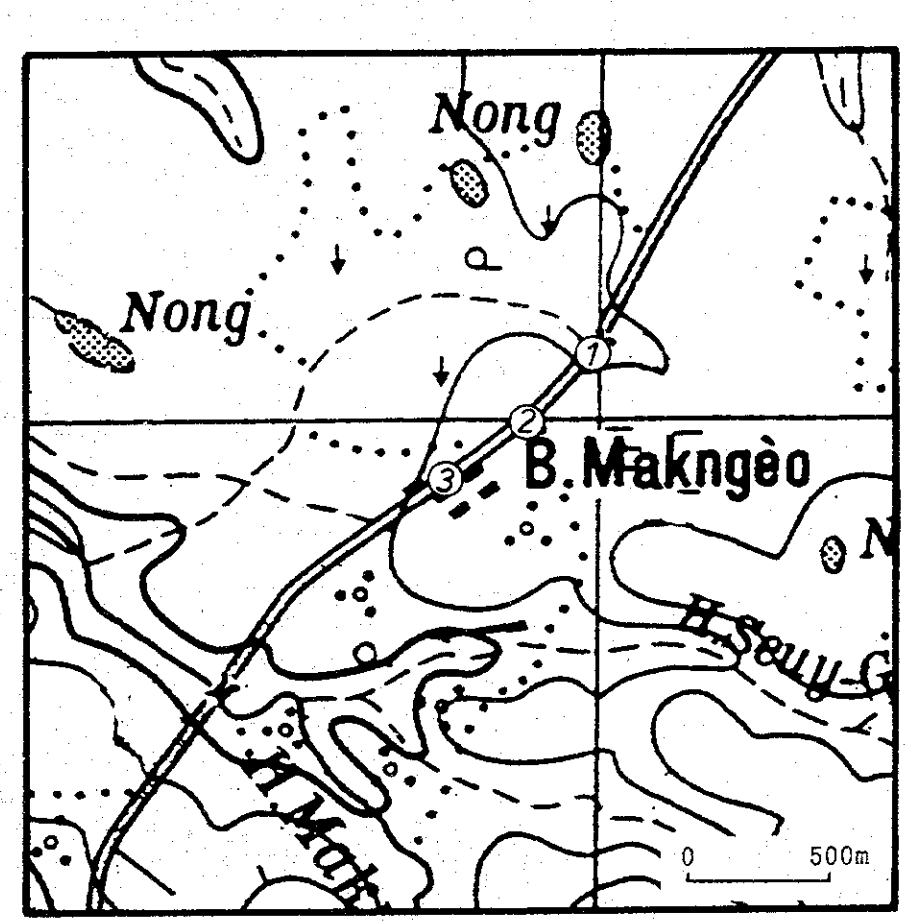

Figure 3.3.6(42/42)	Filtered Data and Anomaly Indication on VLF method (C 39 B.Makngeo)
THE STUDY ON GROUNDWATER DEVELOPMENT FOR CHAMPASAK AND SARAVAN PROVINCES, LAO PEOPLE'S DEMOCRATIC REPUBLIC	
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SUPPORTING REPORT

CHAPTER 4 TEST WELL DRILLING AND PUMPING TEST

CONTENTS

LIST OF TABLES

LIST OF FIGURES

4. Test Well Drilling and Pumping Test

4.1 Drilling Locations and Work Items

(1) Purpose of drilling and locations

Test well drillings and pumping tests were conducted at twenty (20) villages selected in the Phase I of the Study. The purpose of the test well drilling is as follows:

- To investigate hydrogeological characteristics of the formations underlying the Study Area and to obtain the data for the evaluation of groundwater potential

- To examine the groundwater quality from the point of drinking water standard and to obtain the data for the analysis of groundwater flow according to the chemical characteristics by aquifer and by area.

- To obtain basic data for the selection of the prioritized groundwater development area and its planning.

The locations of the test wells are shown in Figure 4.1.1.

(2) Items of the drilling work and tests

Test well drilling and pumping tests started October 1994 and completed February 1995. The planned number and the depth of the well are 18 wells (50m depth) and 2 wells (100m depth). The quantity and testing items are presented in Table 4.1.1 and details of the well is presented in Table 4.1.2. Down-the-hole drilling method was used for all test wells.

The total amount of drilling depth is 1,146 m and total casing length is 1,090.5m. The 150mm diameter casing was used.

The drill cuttings were collected and observed at every one meter. The drilling speed was also recorded. The spontaneous potential, the resistivility and the gamma loggings were conducted at the borehole. After completion of the well, the pumping tests were conducted. Water level was measured continuously and water sample was taken.

4.2 Results of Drilling

(1) Well completion

The screen length and the position were determined by judging the aquifer unit based on the lithological and geophysical logging data and groundwater level as shown in Table 4.1.2. The casings used for the well completion were 100mm diameter PVC for 50m -depth well and 150mm diameter steel pipe for 100m-depth well.

The annular space of the screen was filled with gravel. From the top of the gravel filter to the surface, the annular space was filled with bentonite and the drill cuttings in order to avoid seepage from the surface. Upper most five (5) meters were grouted by cement.

(2) Hydrogeology

Table 4.1.2 and Figures 4.2.1a to 4.2.1c present the elevation of the ground surface, lithology, screen position, specific capacity of the test wells.

C-4 B.Nongphai

This well is located on the erosion hill and drilled upto the depth of 50m. The formation consists of hard , consolidated and alternating beds of sandy shale and sandstone of Jurassic age. From the surface to 5m depth, it was covered by weathered sandstone. It consists of fine to medium sandstone from 5m to 36m and compact sandy shale form 36m to 50m. This sandstone contains groundwater and forms an aquifer. Groundwater level is 9m below ground surface. It declines to 12m in the dry season. The most lowest water levels in the dry season is estimated and presented later.

C-4 B.Houaxe

The test well is located on the erosion hill at 115m in elevation. The well was drilled upto the depth of 182m because no good aquifers were encountered. The formation is composed of the alternating beds of hard and consolidated sandstone, sandy shale and mudstone. The surface soil is composed of wethered sandstone. From 4m to 35m, it consists of very hard fine and medium sandstone. Compact sandy shale was encountered from 36m to 110m and the alternating beds of sandstone and shale from 110m to 182m. No aquifers were encountered up to the depth of 60m. Very poor aquifer was found at thin sandy bed at the depth of 60m.Dark brownish gray, hard, medium sandstone was encountered at the depth of 109m. This sandstone has thickness of 35m and contains groundwater. However, groundwater is salinized. EC measured on site showed more than 10,000 μmho/cm. SP logging data also indicates low potential in this sandstone. The well was drilled up to the depth of 182m in order to obtain more productive aquifer. Another screen was set between 156m and 180m. Groundwater level is about 18m below ground surface. It may drop to 20 m in the dry season.

C-16 B.Louy

The well is located at the erosion hill of 150m in elevation. The well depth is 48m. The formation is composed of the alternating beds of hard and consolidated sandstone, conglomerate, sandy shale and mudstone of Jurassic to Cretaceous age. The surface soil consists of clay bed containing gravel with thickness of 6m. The surface soil is underlain by gravel and laterite at about 1m thickness. The formation consists of gravel bed from 9m to 23m and the alternating beds of sandstone and mudstone. Groundwater is contained in the gravel and sand stone. Groundwater level shows 7m below ground surface. It will drop to 9m in the dry season.

C-44 B.Thongsala

The well is located in the basalt slope of 220m in elevation. It was drilled up to the depth of 43m. The formation consists of very hard basalt lava and the alternating beds of sandstone and sandy shale of Jurassic age. The surface soil is made up of weathered basalt. It is composed of autobrecciated lava with rich pore space from the depth of 2m to 23.5m. It mainly consists of sandy shale intercalating sandstone from the depth of 23.5m to 43m. The autobrecciated lava

forms an aquifer. Groundwater level is 9m below ground surface. It may drop to 13m in the dry season.

C-49 B.Lak-21

The well was drilled up to the depth of 60m on the basalt slope at 442m in elevation. The formation consists of mud flow deposits and highly weathered basalt lava. The surface soil is composed of the weathered clay of mud flow deposits. It comprises of claycy and weakly consolidated mud flow deposits containing boulder, which is underlain by strongly weathered basalt. The basalt lava forms an aquifer, however, its productivity is not so high because of strong weathering. Groundwater level shows 14m below ground surface and it will decline to 22m in the dry season.

C-65 B.Lak-24

The well is located on the erosional plain at 100m in elevation. The well depth is 50m. The formation consists of consolidated hard alternating beds of sandstone and reddish-purple mudstone. The surface bed is composed of clay bed in 2m thick and underlying laterite in 6m thick. It is composed of medium sandstone from the depth of 9m to 23m and compact sandy shale from 24m to 44m. The sandstone bed forms an aquifer and its water level is 7m below ground surface. It will decline to 10m in the dry season.

C-75 B.Nongkhe

It is located in the alluvial plain at 95m in elevation. The well was drilled up to the depth of 50m. The formation consists of sandy clay up to the depth of 11m and reddish-purple mudstone of Jurassic age intercalating sand stone from the depth of 12m to 50m. The sandstone forms an aquifer . Groundwater level shows 4m below ground surface and decline to 7.5 m in the dry season.

C-79 B.Samkhanaboua

The well is located on the erosion hill at elevation of 96m. The well depth is 45m. The formation consists of sandy clay and reddish-purple shale of Jurassic age intercalating sandstone. The surface soil is composed of clay bed in 7m thick. It comprises of hard shale intercalating thin sandstone from the depth of 8m to 45m.

The fissure of the sandstone and the shale contain groundwater and form an aquifer. Groundwater level shows 7.5m below ground surface and will drop to 10m in the dry season.

C-88 B.Maisivilai

The well is located on the erosion hill and was drilled up to the depth of 50m. The formation is composed of the alternating beds of sandy shale, black shale and hard sandstone of Carboniferous to Permian ages. The surface soil consists of wethered clay. It is mainly composed of black slate intercalating thin sandstone from the depth of 9m to 50m. Fissures and faults are abundant in the black slate. Groundwater may occur in these fissure and fault. Groundwater level shows 9.5m below ground surface. It will drop to 16m in the dry season.

C-89 B. Nasenphan

The well depth was 50m. It is located on the erosion hill at elevation of 88m. The formation consists of sandy clay and dacitic tuff of Triassic age. The surface soil is composed of weathered clay. It mainly comprises of hard massive tuff from the depth of 5m to 50m. Joints, fissures and faults are found abundantly and they contain groundwater. Groundwater level show 5.8m below ground surface. It will decline to 7.4 m in the dry season.

S-4 B. Houaykapho

The well is located on the erosion hill at elevation of 160m. The depth of the well is 45m. The formation consists of the alternating beds of hard consolidated sandstone, sandy shale and mudstone from Jurassic to Cretaceous ages. The surface soil in 7m thick is composed of weathered sandstone. It consists of sandstone from the depth of 8m to 41m and reddish-purple mudstone from 42m to 45m.

A part of the sandstone constitutes an aquifer and its water level is 9m below ground surface. It will decline to 13m in the dry season.

S-12 B. Nongsano

It is located on the erosion hill at elevation of 160m. The well was drilled up to the depth of 50m. The formation consists of the alternating beds of hard and consolidated mudstone, sandstone and sandy shale of Jurassic age. The surface soil is composed of weathered mudstone. It comprises of reddish-purple mudstone form the depth of 7m to 43m and medium sandstone from 43m to 50m. The sandstone forms an aquifer and its groundwater level shows 6.5m below ground surface. The water level in the dry season is estimated to be 9m.

S-24 B. Donmuang

The well is located on the terrace and was drilled up to the depth of 50m. The formation consists of hard consolidated mudstone, sandstone and sandy shale of Jurassic age. The surface soil is composed of clay bed of fluvial deposit in 10 m thick. It comprises of the alternating beds of reddish-purple mudstone and sandstone from 11m to 50m. A part of the sandstone forms an aquifer. Groundwater level shows 10m below ground surface. It will decline to 13m in the dry season.

S-38 B. Nongngong

The well is located on the erosional plain at elevation of 140m. The well depth is 50m. The formation mainly consists of the alternating beds of hard consolidated mudstone, sandstone and sandy shale. The surface soil consists of wethered sandstone in 6m thick. It is composed of the alternating beds of reddish-purple mudstone and medium sandstone. A part of the sandstone forms an aquifer. Groundwater level is about 8m below ground surface. It will drop to 10m in the dry season.

S-50 B. Samia

The well is located on the terrace at elevation of 145m. The well depth is 50m. The formation consists of the alternating beds of hard consolidated mudstone, sandstone and sandy shale. The surface soil is composed of sand and clay beds of fluvial deposits. It comprises of the alternating beds of reddish-purple mudstone and sandstone from the depth of 12m to 50m. Groundwater is contained in the sand bed of the fluvial deposits and Jurassic sandstone. Groundwater level shows about 7m below ground surface. It will decline to 10m in the dry season.

S-56 B. Chong

The well is located on the basalt slope at elevation of 170m. The well depth is 50m. The formation consists of hard basalt lava and the alternating beds of sandstone and mudstone of Jurassic age. The surface soil is composed of wethered basalt lava in 6m thick. It comprises of autobrecciated basalt lava with abundant pore space from the depth of 7m to 15m. It consists of the alternating beds of reddish-purple mudstone and sandstone from the depth of 16m to 50m. The autobrecciated basalt lava and sandstone form an aquifer. Its water level shows 5m below ground surface. It will drop to 7.5 m in the dry season.

S-64 B. Phonphai

It is located on the erosional plain at elevation of 190m. The well depth is 50m. The formation consists of the alternating beds of hard consolidated mudstone, sandstone and sandy shale. The surface soil is composed of wethered sandstone. From the depth of 3m to 50m, the formation comprises of the alternating beds of reddish-purple mudstone and medium sandstone. A part of the sandstone forms an aquifer. Its water level shows 10m below ground surface. It will decline to 12m in the dry season.

S-75 B.Nakasao

The test well is located on the erosional plain at elevation of 194m. The well depth is 50m. The formation consists of hard consolidated alternating beds of mudstone, sandstone and sandy shale of Jurassic age. The surface soil is composed of weathered sandstone. From the depth of 4m to 50m, it is composed of the alternating beds of reddish-purple mudstone and fine sandstone. A part of the sandstone forms an aquifer. Groundwater level shows 5m below ground surface. It declines to 7m in the dry season.

S-84 B. Beng

The test well is located on the basalt slope at the elevation of 308m. The well depth is 66m. The formation consists of hard basalt lava and sandstone of Jurassic or Cretaceous age. The surface soil is composed of weathered basalt. The formation comprises of basalt lava, autobrecciated lava with abundant pore and fissures from the depth of 4m to 57m. From 58m to 66m, medium sandstone exists. The autobrecciated basalt lava forms a good aquifer. Its water level shows 19m below ground surface. It may drop to 24 m in the dry season.

S-100 B. Hountai