

PD-AAW-854
6/2/84

UNCLASSIFIED

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

ST. LUCIA GEOTHERMAL PROJECT

NO. 538-0137

AMENDMENT NO. 1

TO THE PROJECT PAPER

AID/LAC/P-0370

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

C A = Add
C = Change
D = Delete

Amendment Number
1

DOCUMENT CODE
3

2. COUNTRY/ENTITY

ST. LUCIA

3. PROJECT NUMBER

538-0137

4. BUREAU/OFFICE

REGIONAL DEVELOPMENT
OFFICE/CARIBBEAN

5. PROJECT TITLE (maximum 40 characters)

ST. LUCIA GEOTHERMAL

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
08 31 88

7. ESTIMATED DATE OF OBLIGATION
(Under 'B.' below, enter 1, 2, 3, or 4)

A. Initial FY 85 B. Quarter 4 C. Final FY 87

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY 85			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(3,000)	()	(3,000)	(4,000)	()	(4,000)
(Loan)	(-)	(-)	(-)	(-)	(-)	(-)
Other U.S.						
1.	-	-	-	-	-	-
2.	-	-	-	-	-	-
Host Country	-	80	80	-	-	-
Other Donor(s) UNRENRE	2,380	-	2,380	3,116	600	600
TOTALS	5,380	80	5,460	7,116	600	7,716

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ESF	744	825		3,000	-	1,000	-	4,000	-
(2)	-	-		-	-	-	-	-	-
(3)	-	-		-	-	-	-	-	-
(4)	-	-		-	-	-	-	-	-
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To establish the economic and technical viability of the Qualibou Caldera as a long term geothermal resource capable of generating substantial quantities of electrical power and other forms of energy which can be developed by the private sector.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY
1 2 8 8

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment)

The purpose of this amendment is to add \$1.0 million to the life of project and to extend the PACD by one year.

17. APPROVED BY

Signature

Alfred B. ...

Title

Acting Director, RDO/C

Date Signed

MM DD YY
06 26 87

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY
07 14 87

AUTHORIZATION
AMENDMENT NUMBER ONE

NAME OF COUNTRY: St. Lucia
NAME OF PROJECT: Geothermal Project
NUMBER OF PROJECT: 538-0137

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, the Geothermal Project for St. Lucia was authorized on August 14, 1985. That Authorization is hereby amended as follows:

a. In paragraph 1 delete the words "Three Million United States "U.S." Dollars (\$3,000,000)" and, in lieu thereof, insert "Four Million United States "U.S." Dollars (\$4,000,000)"

2. The Authorization cited above remains in force except as hereby amended.

Alfred Bisset
Alfred Bisset
Acting Director

Date 6/26/87

Clearances

C/ENGR: JDBaird
C/PDO: KFinan
RLA: TCarter
C/PRO: DMutcher
CONT: RWarin

(JDB)
(VMF)
(TC)
(DM)
(RW)

Date: 6/26/87
Date: 6/24/87
Date: 6/26/87
Date: 6/26/87
Date: 6/28/87

ST. LUCIA GEOTHERMAL PROJECT
NUMBER 538-0137

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AMENDMENT NUMBER ONE TO THE PROJECT PAPER

I. RECOMMENDATION AND SUMMARY

RDO/C recommends authorization of an additional \$1,000,000 in grant funds to the Government of St. Lucia and an extension of the Project Assistance Completion date to August 31, 1988 for the completion of the St. Lucia Geothermal Project.

II. THE ORIGINAL PROJECT

The well drilling program in this project was the final step in the exploratory program for geothermal exploitation that began in St. Lucia in 1974; when the British Government financed an exploration program, which included the drilling of seven shallow large diameter wells. In June 1984, the Government of St. Lucia (GOSL) formally applied to USAID for financing of the exploratory drilling phase of the St. Lucia Geothermal Project. Convinced of the likelihood of a major geothermal find and of the favorable impact of its development to the economy of St. Lucia, USAID and the United Nations Revolving Fund for Natural Resources Exploration (UNRFNRE) agreed to co-finance further exploration up to the point of production and commercialization.

At a Tripartite Conference in April 1985, GOSL, UNRFNRE, USAID, and Consultants AQUATER, GENZL, GEOTHERMEX, LANL, as well as geothermal specialists from the US Department of Energy and the US Geological Survey Service, agreed on the drilling sites.

A project Agreement was signed between UNRFNRE and GOSL in July 1985 at a cost of \$2,380,000 and a Grant Agreement between GOSL and USAID was signed in August 1985 at a cost of \$3,000,000. The GOSL in turn agreed to a counterpart contribution of \$80,000.

The allocation of activities for this exploration program, as reflected in the project paper prepared in August 1985, was:

		US \$
USAID	- Civil works for rig delivery, well drilling costs, environmental issues and technical support.	3,000,000
UNRFNRE	- Project supervision, well site services, well completion, production testing and materials	2,380,100
GOSL	- Pad preparation, water supply lines, relocation of utilities, and rights to land for drilling operations	<u>80,000</u>
TOTAL		\$ 5,460,100

For details of the existing financial plan See Annex A.

III. CIRCUMSTANCES RESULTING IN THE NEED FOR THIS AMENDMENT

During project design it was recognized that this was an exploration project within a relatively new field of energy resource utilization. Although all the problems could not be foreseen, the design team attempted to compensate by making the contingency line item large enough to cover underbudgeted costs. It should be noted that in exploratory deep well drilling it is virtually impossible to forecast accurately parameters such as drilling rates and methods of drilling (mud, water or air) because the ground is not homogeneous and the detailed geology and condition of the sub strata is not known. Also the real work is being done at the bottom of the hole, thousands of feet below the earth's surface. There is no way of seeing what is down there.

The first phase of project adjustments began with the procurement of the well drilling contractor. The original plan was to drill 3 wells. Prequalification Advertisements were placed in September 1985 and Invitations for bid (IFBs) went out in December 1985. The bids received were well above the estimates. Therefore, the decision was made to reject all the bids, alter the conditions of contract and reissue the IFBs. The alterations in the conditions of contract were basically the reduction in the number of wells from 3 to 2 and the transferring of the civil works from the US well drilling contractor to local contractors. The new IFBs were sent out in March 1986, and bids were opened in April 1986. After evaluation a contract was awarded on June 27, 1986 to the Big Chief Drilling Co. of Oklahoma.

At an early stage of the mobilization and drilling phases of the project, it became apparent that a number of unforeseen problems had arisen which would add to the total costs of the project. Attempts to overcome these problems resulted in the contingencies line item of the financial plan being almost completely depleted. This, in turn, led to very great vulnerability during drilling, due to insufficiency of funds for an emergency. To illustrate, if a drill bit got stuck at the bottom of the hole, resulting in costly delays to the drilling program, there are insufficient funds in the contingency item to meet this cost.

An explanation of the extra costs are as follows:

A. Road and Harbor Works

When the drilling contractor visited the site to discuss mobilization, it was pointed out that extra road works were needed at the Calvaire/Coubaril Corner (near Soufriere) and the Belfond Road. Furthermore, the access road to the Etangs site had to be lengthened to accommodate the storage of casing. Originally, the project plan was to ship the rig and equipment on an LST (Landing Ship Tank - Landing Craft) which could land the rig and equipment on the beach. However, the drilling contractor was unable to locate a US Flag LST and therefore had to ship by barge. This required the construction of a causeway to land the heavy rig equipment. All these works have been described in detail and justified in the Action Memos to the Director accompanying IL's 16, 18 and 23 (See Annex E).

x

B. Water Supply

Early in the project, AQUATER, the well drilling consultants under contract to UNRFNRE, completed its water supply studies and stated that the arrangements made for water supply were inadequate. The issue here was the quantity of water required for drilling and the high head due to the mountainous terrain. This in turn led to the purchase of four centrifugal 400 gpm pumps which would be used in 3 stage pumping with one pump on standby. The GOSL agreed to maintain the pumps but noted this was yet another high, unforeseen cost. This is due to the 24 hour water supply operation that became necessary and went on for nearly 3 months, because of the fractured nature of the strata which resulted in the drilling operation being carried out with water. In view of this, the GOSL has requested assistance. Details of the water supply pumps procurement are described and justified in the Action Memos to the Director accompanying IL's 10, 13 and 17 (See Annex E).

C. Additional Mobilization, Rotary Table, Power Tongs

During Mobilization of the drilling rig and equipment, it became apparent that additional expenditure would take place due to road transportation problems. This has been detailed in the Action Memo to the Director accompanying IL No. 21 (Attached at Annex E). Also the Rotary Table specified was determined to be too small, as a result additional costs were incurred for a bigger sized rotary table. Finally, Big Chief Drilling Co., the well drilling contractor informed the GOSL that mechanical spinning of the casing was not possible on the Big Chief rig. This resulted in extra expenditure for procuring power tongs. In addition, costs will be incurred during the use of the power tongs (fuel and maintenance). This has been detailed in the Action Memo to the Director accompanying IL No. 12 (See Annex E), in UNRFNRE and RDO/C correspondence, and in the details of the extra costs prepared by AQUATER (See Annex B).

D. General Services

General services such as cleaning casing, maintenance work on the water and waste ponds, other site maintenance work, shifting casing from offsite to the vicinity of the drilling rig, etc. had not been budgeted in the drilling contract. Nor has it been budgeted for elsewhere. A small amount of funds must be set aside for this work.

E. Well Drilling

Very early in the drilling program AQUATER pointed out that due to the exploratory nature of the wells, and the requirement that the wells have the facility to be converted to production wells, the drilling would take longer than planned for in the contract schedule. The contract schedule provided a total of 2700 hours of Time Rate with drill pipe, 200 hours of Time Rate

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without drill pipe, 200 hours of Standby Rate with crews and 200 hours of Standby Rate without crews. The fractured nature of the ground at the beginning of well drilling, persuaded AQUATER to reduce the load on the drill bit in order to reduce the chances of the drill bit getting locked in the well, which would result in a very time consuming and costly operation to release the drill bit. This, in turn, slowed down the drilling rate. Also every cementing operation took longer than expected again due to the fractured nature of the ground. Therefore AQUATER has recommended an additional 2340 hours of Time Rate with Drill Pipe for the 2 proposed wells (See Annex B).

IV. REVISED COST ESTIMATE AND FINANCIAL PLAN

In the revised financial plan - See Annex C, all item descriptions remain as they are in the present financial plan. In effect, the \$1.0 million increase will be needed to replenish the contingency line item of the financial plan and to provide funds for the estimated additional drilling time and the extra road works and operating costs of the water supply pumps and the power tongs.

Item 12 of the Financial Plan of the Grant Agreement allocates \$30,000 for "Repairs of Existing Wells". It appears that these repairs may be difficult to carry out due to a dispute with respect to access. In view of this, the money allocated has been transferred to item 13 - Contingency and a nominal sum of US \$100 left in the item. The repair to existing wells could be reviewed towards the end of the project. An estimate of the extra costs is as follows:

	US \$	Financial Plan Line Item
1. Extra road work at Calvaire/Coubaril Corner, Belfond Road, Etangs Access Road and extra harbor works at Soufriere	30,000	2
2. Procurement of Water Supply Pumps and (89,000 for pumps plus 10,340 for part maintenance costs).	99,340	13
3. Additional mobilization and demobilization costs.	225,000	13
4. Change in size of the Rotary Table Procurement of Power Tongs including operating costs.	5,600 42,400	6 13
5. General services on site.	15,000	6
6. Additional Drilling Time for two wells 2340 hrs @ \$249/hr	<u>582,660</u>	6
TOTAL	1,000,000	

Further details of the extra costs are given in Annex D.

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The UNRFNRE increased its contribution from \$2,380,100 to \$3,115,500 an increase of \$735,400. The allocations for project management and supervision, well completion supplies and services, chemical analyses and reporting costs were not changed or reduced. The allocations for all other items were increased, with drilling materials and well logging recording the greatest increases (\$251,000 and \$307,000 respectively). Details of the UNRFNRES's budget increase are attached at Annex C. The increase is reflected in the revised financial plan of the USAID-GOSL Grant Agreement.

The GOSL increased its contribution from \$80,000 to \$600,000 an increase of \$520,000. The allocation for pad preparation, ponds, water supply, relocation of utilities and land acquisition was increased. Details of the GOSL's contribution are attached at Annex D. This increase is also reflected in the financial plan of the USAID-GOSL Grant Agreement.

V. REVISED IMPLEMENTATION SCHEDULE

The current PACD of the St. Lucia Geothermal project (538-0137) is August 31, 1987. The Grant Agreement was signed in August 1985. The contract for well drilling was awarded in June 1986 and well drilling started in April 1987, one year 8 months after the signing of the Grant Agreement. The late start was due to the unsuccessful first round of bidding, the dispute between UNRFNRE and the Big Chief Drilling Co. with respect to the first rig inspection, the misunderstanding between Big Chief and the GOSL with respect to harbour and road works and the requirement for additional mobilization assistance. Also the well drilling rate exceeds that given in the contract schedule. The rate in the schedule is 56.25 days per well, whereas the actual rate is about 105 days per well. Well drilling of the first well is expected to be completed by mid-July 1987, a total period of about 3 months.

The possibility of increasing the drilling rate has been addressed by the project managers, AQUATER, and the conclusion is that the rate should not be increased as there is a possibility of losing the drill bit as a result, losing the well and therefore having to drill a new well which would be a very costly exercise. The present time schedule for well drilling activities is as follows:

Drill rig arrived in St. Lucia	March 23, 1987
1st well started	April 13, 1987
1st well completed (estimate)	July 13, 1987
2nd well started	July 27, 1987
2nd well completed	October 27, 1987
Demobilization	December 31, 1987

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The well testing period is 8 months. RDO/C will be actively involved in project monitoring during this period because of our interest in the potential for private sector geothermal development and the importance of the well testing to that goal. From the above schedule it appears that the well testing period will be completed by June 1988. It is therefore suggested that the new PACD be August 31, 1988, an extension of 1 year.

VI. MODIFICATIONS TO ANALYSES

Since this amendment does not alter the project description, there are no revisions to the environmental, institutional, technical, nor social soundness analysis.

The increase in cost will significantly lower the economic rate of return for this project. However the sensitivity analysis contained in Table C.4 of the Project Paper indicates that geothermal is still the least-cost alternative with an equalizing discount rate of 18.5 percent. However, further cost increases and other factors such as line costs to the geothermal power station will seriously threaten the economic viability of the geothermal development.

ST. LUCIA GEOTHERMAL PROJECT (538-0137)
EXISTING FINANCIAL PLAN

D. Financial Plan

Summary costs estimates are as follows:

	AID	UNRFNRE	GOSL
1. Personnel and Travel	-	84,000	-
2. Civil Works (Harbor, Roads and Bridges)	170,000	-	-
3. Pad Preparation, Ponds, Water Relocation of Utilities and Land Acquisition	-	-	80,000
4. Pre-project Expenditure	-	65,000	-
5. Project Supervision & Management	-	625,000	-
6. Well Drilling & Casing	2,167,070	-	-
7. Materials, cementation, mud engineering, well completion, testing and other works	-	1,418,500	-
8. Environmental Assessment and Monitoring	75,000	-	-
9. Equipment Freight and Insurance (less residual)	-	4,400	-
10. Technical Support, Management Services (fee to UNRFNRE)	65,000	14,000	-
11. Technical Assistance, and Training	90,000	-	-
12. Repairs to Existing Wells	30,000	-	-
13. Contingency	<u>402,930</u>	<u>169,200</u>	<u>-</u>
TOTAL	3,000,000	2,380,100	80,000

ADDITIONAL COSTS ANALYSIS

1 Fork LIFT

a) Mud material movement

1 hrs work/day x 60 days/well = 240 hrs / 2 wells
 240 hrs x 50 US \$ / h = US \$ 12,000.00

b) Cement and additives movement

675 bags : 30 bags/hour = 225 hours / 2 wells
 225 hrs x 50 US \$ / h = US \$ 11,250.00

c) Coring movement

SL-1: - 3 3/8" (50 joints), loading/unloading at site
~~from cement field~~ (see point 2 a.) = 4 hrs
 - 9 5/8" (83 joints) on site = 5 u
 - 7" (66 joints) loading on
 Tender Truck at SL-2
 12 joints x Trip = 6 trips = 12 u
 21 hrs x 50 US \$ / h = US \$ 1,050.00 ✓

SL-2: - 20" (15 joints) on site = 4 hrs
 - 13 3/8" (50 joints) " = 6 u
 - 9 5/8" (83 joints) " = 7 u
 - 7" (65 joints) " = 6 u
 23 hrs x 50 US \$ / h = US \$ 1,150.00 ✓

c) Various

10 hours/well = 20 hrs / 2 wells
 20 hours x 50 US \$ = US \$ 1,000.00 ✓

2 - TANDEM TRUCK

a) SL-1: $\left[\begin{array}{l} 13\frac{3}{8}'' \text{ pipe (50 joints) from erocket field} \\ 4 \text{ trips} \times 1 \text{ hrs/trip} = 4 \text{ hrs} \\ 4 \text{ hrs} \times 90 \text{ US\$ / h} = \text{US\$ } 360.00 \text{ NO} \\ - 4'' \text{ liner (83 joints) from SL-2} \\ 6 \text{ trips} \times 2 \text{ hrs/trip} = 12 \text{ hrs} \\ 12 \text{ hrs} \times 90 \text{ US\$ / h} = \text{US\$ } 1,080.00 \checkmark \end{array} \right.$

b) Various

10 hrs/well = 20 hrs/2 wells

20 hrs \times 90 US\$ / h = US\$ 1,800.00 \checkmark

3 - GIN TRUCK

a) Various

10 hrs/well = 20 hrs/2 wells

20 hrs \times 85 US\$ / h = US\$ 1,700.00 \checkmark

4 - LOADER / CRT FOR DISTANCE IN BENTON ROAD

a) SL-1: $\left[\begin{array}{l} - \text{ for } 4'' \text{ liner mobilization from SL-2} \\ 12 \text{ hrs} \times 150 \text{ EC\$ / h} = 1800 \text{ EC\$} = \text{US\$ } 670.00 \checkmark \\ - \text{ for fuel tank mobilization} \\ 5 \text{ trips} \times \text{month} \times 3 \text{ months} = 15 \text{ trips} \\ 15 \text{ trips} \times 6 \text{ hrs/trip} = 90 \text{ hrs} \\ 90 \text{ hrs} \times 150 \text{ EC\$ / h} = 13,500.00 \text{ EC\$} = \text{US\$ } 5,000.00 \checkmark \end{array} \right.$

b) Various

20 hours \times 150 EC\$ / h = 3000 EC\$ = US\$ 1,000.00 \checkmark

5. FUEL CONSUMPTION FOR POWER TOWNS ENGINE

a) 8 hours for 20" casing, 15 hrs for 13³/₈" casing, 20 hrs for 9⁵/₈" casing, 17 hrs for 4" casing = TOT 60 hrs/well
= 120 hrs / 2 wells.

$$120 \text{ hrs} \times 10 \text{ gal/h} \times 5 \text{ EC \$/gal} = 6,000.00 \text{ EC \$} = 1,500.00 \text{ US \$}$$

b) Hydraulic fluid

100 gal x ----- = ----- = US \\$ 1,000.00

6. LABOURERS

a) for cleaning & run casing (for 1 well)

- 20" (15 joints), 2 men x 3 days = 6 days x 50 EC/day = 300 EC
- 13³/₈" (50 joints), 2 men x 4 " = 8 " " " = 400 "
- 9⁵/₈" (83 joints), 2 men x 4 " = 8 " " " = 400 "
- 4" (66 joints), 2 men x 4 " = 8 " " " = 400 "

TOT. 1,500.00 EC

For 2 wells = 3,000 EC =

US \$ 1,100.00

b) for general services, clearing the
drainages and site, after general needs

1 continuous daily labourer:

7 months x 30 days (8 hrs/day) = 210 days / 2 wells

210 days x 30 EC \\$/day = 6,300.00 EC = US \$ 2,325.00

7. ADDITIONAL DRILLING ACTIVITY'S TIME

u° 30 days x well = 60 days / 2 well x 24 hrs/day =

1440 hrs x 249 US \\$/hr = US \$ 358,560.00

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8. CONTINGENCY

Deeping well, Fishing jobs, Well deviation jobs,
Accidents etc

$$15\% \text{ of } 1,921,455.00 \text{ US \$} [1,518,400.00 + 403,355.00 \\ (-1.7 \text{ APT. TOTAL COST})]$$

$$2\% \text{ of } 1,518,400 = 303,680.00 = \text{US \$ } 2,282,63.00$$

9. POSSIBLE BIG CLAIM

9.1 As per BIG CLAIM advising

- from 1st August 1986 to 15 March 1987 = 225 days (7.5 months)
- 225 days - 60 days contract mobilization = 165 days delay
- 165 days x 5946.00 US \$/day = US \$ 986,040.00

9.2 As per possible negotiable claim

a) from 1st August 1986 to 1st October 1986 (Notice to proceed
no delay because of rig inspection unsatisfactory

- 225 days - 60 days mobilization - 60 days rig inspection
not satisfactory = 105 days possible delay
- 105 days x 5946 US \$/day = US \$ 624,490.00

b) deduction for man/power not used

$$105 \text{ days} \times 2000.00 \text{ US \$/day (*)} = \text{US \$ } 210,000.00$$

*) Project Manager : 4,000 US \$/month

(2) Rig Supervisor : 10,000

(3) Anker : 13,500

(3) Derrick-man : 12,000

(1) Mechanic-Electr. : 4,000

(2) Arrive : 8,000

$$54,500 \text{ US \$/month} = 1,817 \text{ US \$/day} \\ = 2,000 \text{ US \$/day}$$

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c) Deduction for fuel not used
 $105 \text{ days} \times 1200 \text{ gal/day} = 126,000 \text{ gal}$
 $126,000 \text{ gal} \times 5 \text{ EC\$/gal} = 630,000 \text{ EC\$} = \text{US\$} 233,300.00$

d) Pombee inflation to be inputted
 $10\% \text{ on } 249.00 \text{ US\$/h} = 24.9 \text{ US\$/h} = 597.6 \text{ US\$/day}$
 $210 \text{ days/well} \times 597.6 \text{ US\$/day} = \text{US\$} 125,496.00$

FINAL POSSIBLE CLAIM

TO BE NEGOTIATED:

P. 2 a)	627,400.00
P. 2 b)	210,000.00 (-)
P. 2 c)	233,300.00 (-)
P. 2 d)	125,496.00 (+)
TOT	<u>US\\$ 309,676.00</u>

↙ 000.00

CONCLUSIONS

	US \$
1. FORK LIFT	26,450.00
2. TANDEM TRUCK	3,240.00
3. GIN TRUCK	1,700.00
4. LOAD./CAT. ASSISTANCE	6,770.00
5. FUEL & MAINT. FLUID	3,200.00
6. LABOURERS	3,435.00
1ST TOTAL	44,795.00
7. ADDITIONAL DRILLING TIME	358,560.00
2ND TOTAL	403,355.00
8. CONTINGENCY	288,263.00
3RD TOTAL	691,618.00
9. POSSIBLE BIA CHEF NEGOTIABLE CLAIM	309,676.00
GRAND TOTAL	1,001,294.00
≅	1,300,00

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CENTRAL PLANNING UNIT

Ministry of Finance and Planning,
P. O. Box 709,
Castries,
Saint Lucia, West Indies.

29 June 1987

Mr James S Holtaway
Director
RDO/C
USAID
P O Box 302
Bridgetown
BARBADOS

Dear Sir

SAINT LUCIA GEOTHERMAL PROJECT -
LOCAL COUNTERPART EXPENDITURE

As you are aware, the Geothermal Grant Agreement indicates that the Government of Saint Lucia will provide US\$80,000.00 for pad preparation, water and waste ponds, water line and land acquisition.

My staff has on a number of occasions, indicated to AID's Project Officer, Brinley Selliah, that a sum greatly in excess of the above amount has already been expended by Government. Actual and projected expenditures were channelled to your office by telephone to Mr Selliah. Details of expenditure committed/incurred up to 31 May 1987, by Government are as follows:-

<u>Category/Item</u>	<u>Expenditure (EC\$)</u>
1) <u>PAD PREPARATION</u>	
a) Belfond Drilling Site	702,063.42
b) Etangs Drilling Site	473,536.04
TOTAL: Site Preparation	1,175,599.46
2) <u>WATER SUPPLY</u>	
a) Purchase of PVC pipes, fittings and liner	149,743.16
b) Payment to WASA	92,583.29
c) Operating and Maintenance Water Pumps	34,698.24
d) Other Water Supply Works	18,558.25
TOTAL: Water Supply	295,582.94

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Mr James S Holtaway - 2 -
 Director
 USAID
 Barbados

<u>Category/Item</u>	<u>Expenditure (EC\$)</u>
3) <u>LAND ACQUISITION</u>	
a) Belfond Drilling Site	13,595.00
b) Etangs Drilling Site (three (3) year lease)	51,750.00
TOTAL: Land Acquisition/Lease	65,345.00
GRAND TOTAL EXPENDITURE UP TO 31 May 1987	EC\$1,536,527.40
	US\$ 571,582.25
AMOUNT UNDER LINE ITEM 3 of FINANCIAL PLAN	US\$ 80,000.00

Projected expenditures for the period 1 June to 30 November 1987,
 are as follows:

<u>Category/Item</u>	<u>Estimated Expenditure (EC\$)</u>
1. Fuel and Lubricants	78,000.00
2. Pump Attendants	29,200.00
3. Diesel Mechanics	10,800.00
4. Travel Allowance/Diesel Mechanics	10,602.00
5. Housing Allowance/Diesel Mechanics	2,250.00
6. Road Maintenance - Belfond	55,000.00
7. Corner Works/Belfond-Etangs Junction	20,000.00
8. Land Acquisition/Belfond-Etangs Junction	5,000.00
9. Cellar Construction - Etangs	8,000.00
10. Travel and Subsistence - Energy Officers	22,000.00
11. Payment to WASA	10,000.00
ESTIMATED EXPENDITURE	250,852.00
10% Contingency	25,085.00
TOTAL ESTIMATED EXPENDITURE	EC\$ 275,937.00
	US\$ 102,648.00
	=====

(All conversions at US\$1.00 = EC\$2.6882).

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Mr James S Holtaway
Director
USAID
Barbados

- 3 -

Do not hesitate to contact my Office if you require further clarification of these figures.

Yours sincerely



AUSBERT d'AUVERGNE
Deputy Director
Finance and Planning (Planning)

AB:mv



NATIONS UNIES
NEW YORK

United Nations Revolving Fund for Natural
Resources Exploration
Director
Shigeaki Tomita

Mr. Brinley D. Selliah
General Manager
Caribbean Regional Development Office
US Embassy
Bridgetown, Barbados

Dear Mr. Selliah,

I hope this information is sufficient
for your budgeting. Kind regards.

Tomita
Shigeaki Tomita
Director

....

Project STL/GT/84/001

Per your request of 30 July, attached is a chart with an
explanation by line of increases in the referenced project budget.

Mr. Paul Thyssen
Assistant Administrator, BSA

Shigeaki Tomita
Director, UNRPNRE

5 August 86
STL/ERTN

VF/ez VF
cc: Cron, RR, Pille
VF, SC

cc: MKK

CHART AND EXPLANATION OF
REVISED ESTIMATES FOR 1986-1987
COMPARED TO 1983 ESTIMATES
(30 July 1986)

	1983 Estimate	US\$	1986 - 1987 Estimate
- INTERNATIONAL CONSULTANTS	<u>84,000</u> Refer to 4 man/month as per \$21,000 per month for international consultancy charges.		<u>166,000</u> i) salary and related charges for Fund Operations Supervisor \$150,000 (1985 - 87). ii) other consultancy charges, 1.5 man/month, as per \$16,000.
INTERNATIONAL CONTRACTS			
. Project Supervision Management	<u>625,000</u> as per 67.0 man/months.		<u>520,000</u> as per 57.0 man months.
. Drilling Materials	<u>381,000</u> A detailed and complete list of drilling materials was not attached to 1983 Estimate.		<u>632,000</u> As per lowest bid for complete list of drilling materials prepared in April 1986.
. Mud Engineering and Consumables	<u>255,000</u> Mud engineering services and consumables were not detailed in 1983 Estimate.		<u>318,000</u> As per lowest and more technically convenient bid for a complete and detailed mud programme prepared in April 1986.
. Cementing Services	<u>210,000</u> Cementing Services and consumables were not detailed in 1983 Estimate.		<u>407,000</u> As per lowest bid for cementing and consumables based on a relevant programme prepared in April 1986. A considerable bulk of the cost is for stand-by time for cementation equipment that must remain at well site even when not in operation since it cannot be easily transported to another contractor's project site outside St. Lucia and returned when required again.
. Well Site Geological Assistance	<u>65,000</u> Not detailed in 1983 Estimate		<u>101,000</u> As per lowest bid for a detailed programme prepared in April 1986.

1983 Estimate

US\$

1986 - 1987 Estimate

Well Logging

100,000

This cost was calculated on the basis of 1983 discussions with Los Alamos National Laboratories (LANL).

407,000

In 1986 bidding LANL refused to bid on the Contract because they are not allowed to compete with private companies. Of five organizations invited to bid, only one submitted proposal (Schlumberger). Contract has been awarded after negotiation with Schlumberger. Original price submitted by Schlumberger was \$535,000. Bulk of the costing for stand-by time of equipment at Well Sites. (See comment above for cementation equipment). Because of the high cost of the Schlumberger services, the Director requested both the Governments of Iceland and Japan to suggest more reasonably priced alternatives. The Government of Iceland asked the firm ORCINT to prepare a proposal for the Fund. This proposal as evaluated by the Fund would cost \$200-250,000. However, the techniques used were not considered appropriate for high temperature wells, only Schlumberger having the required tools for high temperature logging.

. Well Completion Supplies and Services

292,000

Over estimated, No details in 1983 Estimate.

80,000

A detailed completion programme was prepared in April 1986. These funds are for specialized materials used for well completion, which have not been included in subheading "Drilling Materials" above.

. Production testing and Reservoir Evaluation

100,000

No details in 1983 Estimate.

292,000

A complete Well Testing programme was prepared in April 1986. This cost refers to the lowest bid received.

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1983 Estimate

1986 - 1987 Estimate

US\$

Chemical Analyses

15,000
No details in 1983 Estimate.

12,000
Estimate as per analysis programme April 1986; cost refers to 1986 prices obtained from specialized laboratories in competitive bidding.

EQUIPMENT

Vehicle

10,000
1983 estimate

11,000
Actual cost for Toyota 4 x 4 Cruiser, purchased in 1986.

MISCELLANEOUS

Vehicle maintenance
and fuel

4,000

4,000

Reporting cost

10,000

5,000 1986 estimate.

11-Jul-66

UNITED NATIONS REVOLVING FUND FOR MINERAL RESOURCES EXPLORATION
Expenditure Schedule "A"

COUNTRY: SAINT LUCIA
PROJECT NUMBER: 511/44/NO1/A
PROJECT TITLE: Geothermal Exploration Drilling in the Maricao Caldera, Montserrat

Budget Line	u/m	TOTAL	USt	O.C. Submission	(DECREASE) M/M INCREASE	REMARKS
1-000 PERSONNEL						
1-100 International	19.5	142,868				
1-190 Consultants (i)	1.5	21,190				
1-199 Sub-Total	21.0	164,058		84,000	17 80,048	
1-900 COMPONENT TOTAL	21.0	164,058		84,000	17 80,048	
2-000 CONTRACTS						
2-100 International						
2-101 Mud Consumables		125,000		127,500	(2,500)	Contract signed: 77,000
2-102 Well Biological Assistance		91,500		65,000	26,500	91,500
2-103 Mud Engineering		206,190		127,500	78,690	206,190
2-104 Project Supervision and Management		720,000		625,000	(105,000)	Note: Contract signed for 595,000
2-105 Well Logging		450,000		100,000	350,000	375,000
2-106 Cementing Services		230,000		105,000	125,000	427,112
2-107 Cementing Consumables		177,000		105,000	72,000	?
2-108 Well Testing		292,000		100,000	192,000	284,181
2-109 Well Completion Services		33,000		146,250	(113,250)	?
2-111 Chemical Analysis		15,000		15,000	(3,000)	?
2-111 Drilling Contingency		0		169,200	(169,200)	?
2-199 Sub-Total		2,136,490		1,685,450	451,840	
2-900 COMPONENT TOTAL		2,136,490				
2-112 - Labourer		20,080				
2-112 - Misc.		20,080				

Best Available Document

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11-Jul-86

UNITED NATIONS REVOLVING FUND FOR NATURAL RESOURCES EXPLORATION
Expenditure Schedule "A"

COUNTRY: SAINT LUCIA

PROJECT NUMBER: STL/B4/N01/A

Budget line	TOTAL		G.C. SUBMISSION		INCREASE (DECREASE)		REMARKS
	m/m	US\$	m/m	US\$	m/m	US\$	
4.000 EQUIPMENT AND PREMISES							
4.100 Expendable Equipment							
4.101 Drilling Materials		564,000		381,000		183,000	
4.102 Well Completion Material		116,000		146,250		(30,250)	
4.199 Total Expendable		680,000		527,250		152,750	
4.200 Non-Expendable							
4.201 Vehicle		11,000		10,000		1,000	
4.299 Total Non-Expendable		11,000		10,000		1,000	
EQUIPMENT TOTAL		691,000		537,250		153,750	
4.400 Freight and Insurance							
4.401 International		37,000		0		37,000	
4.402 National		0		0		0	
4.499 Sub-total		37,000		0		37,000	
4.900 COMPONENT TOTAL		728,000		537,250		190,750	
5.000 MISCELLANEOUS							
5.101 Operation and maintenance		4,000		4,000		0	
5.201 Reporting Costs		5,000		10,000		(5,000)	
5.301 Sundries		0		0		0	
5.401 Technical support, Headquarters Admin.		40,000		0		40,000	
5.900 COMPONENT TOTAL		49,000		14,000		35,000	

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11-Jul-86

UNITED NATIONS REVOLVING FUND FOR NATURAL RESOURCES EXPLORATION
Expenditure Schedule "A"

COUNTRY: SAINT LUCIA

PROJECT NUMBER: STL/B4/N01/A

Budget line	TOTAL		O.C. SUBMISSION		INCREASE (DECREASE)		REMARKS
	m/m	US\$	m/m	US\$	m/m	US\$	
4.000 EQUIPMENT AND PREMISES							
4.100 Expendable Equipment							
4.101 Drilling Materials		564,000		381,000		183,000	
4.102 Well Completion Material		116,000		146,250		(30,250)	
4.199 Total Expendable		680,000		527,250		152,750	
4.200 Non-Expendable							
4.201 Vehicle		11,000		10,000		1,000	
4.299 Total Non-Expendable		11,000		10,000		1,000	
EQUIPMENT TOTAL		691,000		537,250		153,750	
4.400 Freight and Insurance							
4.401 International		37,000		0		37,000	
4.402 National		0		0		0	
4.499 Sub-total		37,000		0		37,000	
4.900 COMPONENT TOTAL		728,000		537,250		190,750	
5.000 MISCELLANEOUS							
5.101 Operation and maintenance		4,000		4,000		0	
5.201 Reporting Costs		5,000		10,000		(5,000)	
5.301 Sundries		0		0		0	
5.401 Technical support, Headquarters Admin.		40,000		0		40,000	
5.900 COMPONENT TOTAL		49,000		14,000		35,000	

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ACTION MEMORANDUM FOR THE MISSION DIRECTOR, RDO/C

FROM: C/ENGR, Michael C. DeMetre

M. C. DeMetre

Action Requested: Approval by signing the attached Project Implementation Letter of a contract award by the GOSL to Big Chief Drilling Co. for geothermal well drilling under the St. Lucia Geothermal Project (538-0137).

Discussion: The Government of St. Lucia by letter dated April 18, 1986 (see Annex 1) sought approval of a contract award to the Big Chief Drilling Co., of Oklahoma. RDO/C by letter to the GOSL dated May 27, 1986 (see Annex 1) agreed that the Big Chief Drilling Co., was the lowest responsive bidder but withheld approval of a contract until all the conditions precedent to disbursement for civil works and drilling activities were met.

The GOSL by letter dated June 2, 1986, submitted additional documentation to satisfy the CPs (see Annex 2) and now seeks approval of a contract award.

Previously by Implementation Letters Nos. 1 and 9, RDO/C had agreed that CPs 4.1(a), 4.1(b), 4.2(c) and 4.2(e) had been met (see Annex 1).

The status of all the conditions precedent to disbursement for civil works and drilling activities is detailed below:

- 4.2(a) "A detailed, time phased implementation plan for the drilling activities, civil works and repair of pre-existing geothermal wells;"

The implementation plan prepared and certified by Aquater and submitted by GOSL (see Annex 2) constitutes satisfaction of this condition precedent.

This plan is a bar chart having 47 activities listed vertically with time periods represented horizontally. The time period estimated for each activity is represented by a horizontal line. The activities are listed in a logical sequence.

- 4.2(b) "Evidence that the Grantee has obtained or has set in motion procedures to obtain all lands for the project, including all necessary easements or other rights in property, to carry out the activity."

The GOSL Attorney General's letter and other documentation submitted by the GOSL (see Annex 2) constitutes satisfaction of this CP.

- 4.2.(c) "(1) an AID-approved environmental assessment (EA) prepared according to A.I.D. Reg. 16 (22 CFR Part 216) and (2) an environmental monitoring plan designed to protect the human and physical environment in and around the proposed drilling sites."

This CP has been satisfied and the GOSL was informed of its satisfaction by RDO/C. (See letter dated May 27, 1986.)

- 2 -

- 4.2(d) "Evidence that the Grantee will provide necessary pad preparation, storage ponds and water supply for the drilling sites;"

The letter from the Chief Engineer, MCWT to the Deputy Director of Finance and Planning (Planning) dated May 30, 1986 acknowledges a letter from the Deputy Director and informs him of the instructions issued to the Crown Agents for the immediate commencement of site preparation work. The letter from Aquater and the GOSL dated May 30, 1986 refers to the water supply requirements and the necessity for the third pump. Other documentation submitted previously by the GOSL (see Annex 3) refer to the materials ordered for the water supply work and the sums of money that have been obligated to meet the water supply and pad preparation work.

In view of the above it can be concluded that this condition precedent has been satisfied.

- 4.2(e) "Evidence of an executed contract or firm arrangement to secure such a contract for the technical services required to prepare a plan and parameters for private investment in geothermal exploitation, including, but not limited to, documents that could provide a description of the proposed institutional, technical and financial relationships between the private investor, the Government of St. Lucia and the St. Lucia Electric Company (LUCELEC). The final outcome of this technical assistance effort will be a Request for Proposals for the selection of private sector investment and participation in the development of geothermal resources."

This CP has been satisfied and the GOSL was informed of its satisfaction by RDO/C (see letter dated May 27, 1986).

The attached letter from you to the GOSL states that the CPs have now been satisfied and therefore in accordance with Implementation Letter No. 9 AID is now in a position to approve the award by GOSL of the drilling contract to the Big Chief Drilling Co.

The bid documents required that the bidder provide and install pumps and services to maintain an adequate supply of water at the drill site. Bidders were also informed of two stage pumping by the GOSL. The Big Chief Drilling Co. under its bid has allowed for two 80 gpm piston type pumps. However, Aquater having been on site and examined the water requirements in detail now says that a much higher pumping rate should be required and also concludes that three pumps may be required due to site conditions (see letter in Annex 2). Aquater at a meeting between RDO/C and GOSL on May 30, 1986, informed that all the other bidders had also allowed for pumping rates in the region of 100 gpm, or roughly that specified by Big Chief. At least one other bidder, Brinkerhoff Signal has informed the GOSL that a 30-40 gpm pumping rate would be adequate for normal drilling operations. In view of this it is suggested that the contract be awarded and the matter of pumping be resolved at a later date. Any matters requiring an alteration to the specification under the contract provisions could be handled by a change order issued pursuant to Article 51 of the General Conditions of the Contract.

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- 3 -

The contract between the GOSL and the Big Chief Drilling Co. when it becomes operative will require the UNRFNRE to establish a Letter of Commitment in favour of Big Chief in an amount equal to the total value of the contract. The Letter of Commitment will provide that all payments shall be made by the UNRFNRE from funds made available by AID once the contract is awarded. Action will be taken by RDO/C to make funds available to the UNRFNRE.

According to the agreement the 60-day mobilization period starts only after the Letter of Commitment has been established and the notice to proceed has been issued by the engineer who is the UNRFNRE. The contractor will have to be informed by the employer who is the GOSL that the UNRFNRE is the "Engineer". Your letter to the GOSL advises that:

1. The GOSL should in the letter of award advise the contractor that the UNRFNRE is the "Engineer" to the project and also inform the contractor that the firm, Aquater, is their Agent; and
2. The GOSL should advise the UNRFNRE of contract award and request the UNRFNRE to issue a notice to the contractor to proceed.

Approved: *[Signature]*

Disapproved: _____

Date: 6/25/86

Attachments: As Stated

Drafted by: ^{PPS}GE:BDSeliah:jc:6/04/86

Clearances:

C/ENGR:MCDeMetre	<u>(In Draft)</u>	Date: 6/24/86
C/PDO:KAFinan	<u>(In Draft)</u>	Date: 6/06/86
CONT:RLWarin	<u>(In Draft)</u>	Date: 6/07/86
RCO:SDHeishman	<u>(In Draft)</u>	Date: 6/06/86
RLA:TBCarter	<u>(In Draft)</u>	Date: 6/06/86
A/D/DIR:PROrr	<u><i>[Signature]</i></u>	Date: <u>6 25 86</u>

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ACTION MEMORANDUM FOR THE MISSION DIRECTOR, RDO/C

I.L.-13

FROM: GE, Brinley D. Sallish

Action Requested: That you approve the award of a contract through the Big Chief Drilling Co., to Service and Supply International Ltd. (SSI) for the provision of four water supply pumps to be used on the St. Lucia Geothermal Project (S36-0157).

Discussion: The Big Chief Drilling Company's contract under the St. Lucia Geothermal Project required Big Chief to supply an adequate amount of water for drilling operations. However, the pumps proposed by Big Chief were said to be inadequate by the management consultants to the project - AQUATER. Nevertheless, further discussions revealed that Big Chief's proposal did meet the requirements specified in the IFE (see Action Memo accompanying Implementation Letter No. 11, copy attached in Annex I). The figure quoted by Big Chief to supply pumps of increased capacity was well above \$100,000 which everyone concluded was too high.

By Implementation Letter No. 11 dated August 5, 1986 (copy attached in Annex I) RDO/C waived the AID requirement of advertisement for the procurement of water supply pumps and agreed to the solicitation of quotations from at least three sources, and indicated procurement could either be carried out by the GOSL or the drilling contractor.

The GOSL then solicited bids from three other sources: Service and Supply International Ltd. (SSI), Export Oil Field Supply Co., and Smith Drilling Systems. All three replied. SSI offered four different combinations of pumps and drive units at four different prices. Export Oil Field Supply Co., offered two different combinations at two different prices and Smith Drilling Systems offered one combination of pump and drive unit. Details of the bids are given in Table I.

AQUATER evaluated all the bids including Big Chief's quote and recommended that SSI be awarded the contract to supply four AURORA pumps with General Motors Diesel 3.71 drive units (see Annex II). The GOSL agreed with AQUATER and by letter dated September 9, 1986 has requested RDO/C to approve the contract award (copy attached in Annex II). Copies of the bids are on file.

A check of the evaluation reveals that SSI is the lowest responsive bidder with an FAS price of \$70,416. There is a difference in the costs given in Table I and those given in the GOSL letter and AQUATER's evaluation. This is due to the fact that both GOSL and AQUATER give CIF costs to Castries, St. Lucia, while Table I gives FAS costs Lake Charles, Louisiana.

The consensus was that it would be in the best interests of the project to have Big Chief handle the procurement of the pumps, thus avoiding any coordination problems. Big Chief agreed to do this for a flat charge of \$7,100 representing their procurement fee (see Annex II). The general opinion is that this is reasonable.

- 2 -

The total cost of procuring the pumps is as follows:

FAS Cost for Four (4) Pumps from SSI	\$70,416
Big Chief's Procurement Fee	7,100
Shipping	8,000 (Estimated)
Transporting to Site	1,484 (Estimated)
	<u>\$87,000</u>

The savings that will accrue due to non-use of pumps specified in Big Chief's contract have not yet been negotiated and will be the subject of a separate change order. The increase to the contract sum can be done by a change order issued by the "Engineer" to the project - UNRFNRE. AID's requirements concerning the change order are given in the Implementation Letter.

TABLE I

<u>Supplier</u>	<u>Combination</u>	<u>FAS Lake Charles, LO Except When Stated US\$</u>
1. Big Chief	T & T Pumps Caterpillar Drive	\$110,000 Ex-Works
2. SSI	Aurora Pump International Harvester Drive	\$ 61,684
3. SSI	Aurora Pump General Motors Drive	\$ 70,416
4. SSI	Aurora Pump Perkins Drive	*
5. SSI	Harrisburg Sancer Pump General Motors Drive	*
6. Export Oil Field	Aurora Pump Perkins Drive	*
7. Export Oil Field	Aurora Pump General Motors Drive	\$ 97,240 Ex-Works
8. Smith International	German Eupp Pump GMC Drive	\$ 88,772 Ex-Works

* Eliminated due to not meeting specifications or source/origin requirements.

It appears that Big Chief takes as long as 30 days to pay their subcontractors after they receive payment. Since the process for payment via AQUATER, COSL, AID and UNRFNRE could also be a relatively lengthy period of time (45 days - see Conditions of Contract II-10), it is proposed that payment to a

- 3 -

subcontractor be made directly from the UNRPNRE instead of going through Big Chief. This could be done on Big Chief's request. This proposal has been made in the Implementation Letter.

The Project budget has an amount of \$402,930 in Item 13 - Contingency. The procurement of the pumps for approximately \$37,000 qualifies to be included in this item as it was an unforeseen project requirement. It should be noted that \$70,416 - FAS cost of the pumps and \$7,100 - Big Chief's procurement fee are firm prices. The rest such as shipping and trucking to site are estimates.

Recommendation: That you approve the GOSL proposal to award the contract for the supply of four pumps complete with drive units and spares to the lowest responsive bidder, Services and Supply International Ltd. It is also recommended that you sign the attached Implementation Letter which informs the GOSL of RDO/C's approval of contract award together with RDO/C's requirements in the change order to the contract.

Approved: _____

Disapproved: _____

Date: _____

Attachments: As Stated

Drafted by:GE:EDSelliish:jc:9/24/86

Clearances:

C/ENGR:JDBaird	(Draft #1)	Date: 9/25/86
PDO:KHuffman	(Draft #2)	Date: 9/29/86
A/C/PD&M:KAFinan	(Draft #2)	Date: 9/29/86
CONT:RLMerin	(Draft #2)	Date: 9/29/86
RLA:TECarter	(Draft #1)	Date: 9/26/86
RDO:SNevin	(Draft #2)	Date: 9/29/86

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ACTION: MEMORANDUM FOR THE ACTING MISSION DIRECTOR, RDO/C

FROM: C/ENGR, James D. Baird

1.L.-16

Action Requested: That you sign the attached Implementation Letter which concurs with the estimate and approves an advance for harbor works, under the St. Lucia Geothermal Project (538-0137).

Discussion: The Grant Agreement for the St. Lucia Geothermal Project was signed with the Government of St. Lucia (GOSL) on August 15, 1985. The project is jointly funded by USAID (\$3,000,000) and UNDP/NERE (\$2,380,000).

Under the Agreement, a portion of AID's contribution is intended to finance a drilling contract for two, production-sized exploitation wells in the Belford and/or Etangs areas of the Qualibou Caldera, and the civil works (e.g., alterations to roads, bridges and harbor) necessary to permit the drilling contractor to transport drilling equipment from the point of entry to the project site. A sum of US\$170,000 was allocated in the Project Financial Plan for the civil works.

Conditions Precedent to first disbursement, Section 4.2., were satisfied on June 26, 1986 and USAID subsequently approved award of the well drilling contract to the Big Chief Drilling Company of Oklahoma (Implementation Letter No. 10).

The Contractor will be transporting his drilling rig to St. Lucia on a 250 ft. series barge. However, because of conditions at the offloading site, a 100' causeway and mooring blocks will have to be constructed to permit offloading the equipment. The Ministry of Communications and Works has prepared an estimate for carrying out this work utilizing its own forces. Schematic drawings of the improvements required and the estimate are attached. RDO/C has reviewed the estimate and found it to be reasonable.

The GOSL has also requested an advance of EC\$81,000 for the work required. Of the US\$170,000 allocated for civil works in the Project Financial Plan, only US\$65,000 has been utilized; thus funds are available for the additional work.

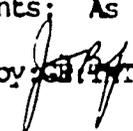
Recommendation: That you sign the attached Implementation Letter approving the estimate prepared by the MCW of the GOSL and an advance of EC\$81,000 to the GOSL.

Approved: _____

Disapproved: _____

Date: _____

Attachments: As Stated

Drafted by  Chung:jc:12/16/86

Clearances:

C/ENGR:JDBaird	(In Draft)	Date: 12/16/86
PDO:MGHuffman	(In Draft)	Date: 12/18/86
CONT:RLWarin	(In Draft)	Date: 12/18/86
RLA:TBCarter	(In Draft)	Date: 12/18/86

37

ACTION MEMORANDUM FOR THE DEPUTY MISSION DIRECTOR, RDO/C

FROM: GE, Brinley D. Selliah

1. L. - 17

Action Requested: That you approve the additional cost of \$2,000 incurred in the procurement of the water supply pumps for the St. Lucia Geothermal Project (538-0137).

Discussion: By Implementation Letter No. 13, RDO/C approved the procurement of 4 water supply pumps from Service and Supply International Ltd. These pumps are required to pump water from an identified source to the drilling sites during the geothermal well drilling operation.

The total cost of procurement (as detailed in Implementation Letter No. 13) was not to exceed \$87,000.00, the breakdown of which was as follows:

Cost of Pumps	\$ 70,410.00
Big Chief's Procurement Fee	7,100.00
Shipping Costs (Estimated)	8,000.00
Transportation to Site (Estimated)	<u>1,484.00</u>
Total	\$ 87,000.00

After receipt of the Implementation Letter the GOSL learned that more spares were required. Since the increase was only \$316/- and was covered by the total amount in the Implementation Letter, they issued Change Order No. 2 of 10/16/86 to reflect the new figures. The change order stated the following:

Total Amount Payable to the Pump Supplier	\$ 70,733.50
Total Amount Including all Charges Not to Exceed	\$ 87,000.00
Total Contract Price in the Well Drilling Contract was Amended to	\$1,611,000.00

After Change Order No. 2 was issued AQUATER, the management consultants, strongly advised the GOSL that pump tests needed to be carried out before the pumps were shipped to St. Lucia. The GOSL accepted this advice and also took the position of planning to send their technician at their expense to Oklahoma to observe the tests and also to get some first hand knowledge about maintenance. This was accomplished on December 19, 1986 when the pump tests were successfully carried out.

The supplier had not allowed for the pump tests in their bid (it was not required of them) and charged an additional \$3,000 for the tests. Also Big Chief Drilling Co., the well drilling contractor who is purchasing agent for the pumps claimed that they too were not originally aware of the pumps tests which involved additional work on their part (this has been authenticated by AQUATER's Drilling Engineer, Tan) and requested that their procurement fee be increased.

Originally the plan was to ship the pumps along with the drilling rig to St. Lucia. However, AQUATER later requested that the pumps be shipped as soon as possible so that they could test out the water supply line and also test the waste discharge areas for environmental requirements. Big Chief claims that their fee for shipping would have been included in their shipping charges. However, since the pumps are now to be shipped separately they request that the fee for shipping be included in the overall pump procurement.

Therefore the pump procurement costs now work out as follows:

Pump Costs Payable to SSI (Supplier)	\$ 70,733.50
Performance Tests	3,000.00
Ocean Freight	6,390.50
Big Chief's Procurement Fee	<u>8,012.40</u>
Sub-total	\$ 88,136.40
Implementation Letter No. 13 & Change Order No. 2	\$ <u>87,000.00</u>
Increase	\$ 1,136.40
Say	\$ 2,000.00

Big Chief has calculated their procurement fee at 10% of procurement costs. However the increase in their fee from \$7,100 to \$8,012.40 is tied to an increase in their duties. It is felt that their method of calculating their fee is reasonable. It is also felt that the increase in the total amount of \$2,000 for pump procurement is reasonable considering that some precautions have now been taken to ensure that the pumps are in a satisfactory condition before they are installed in St. Lucia when a breakdown could prove very expensive (drilling rig downtime and other costs). Please note that inland transportation costs have been deleted, in keeping with Handbook 11, Chapter 3, Clause 2.6.4.4.

In the Action Memorandum for Implementation Letter No. 13, the cost of procuring the pumps was set against the contingencies line item of the project budget which has an amount of \$402,930. Originally the amount allocated for pump procurement was \$87,000. This increase of \$2,000 can also be set against this item, thereby bringing the total pump procurement cost to \$89,000.

It should be noted that the GOSL has issued a variation order to Big Chief, the well drilling contractor, approving the increase in the contract price. This is within the terms of the well drilling contract which in Section II - Conditions of Particular Application, Page 2, states that change orders under \$50,000 can be issued without prior AID approval. However, it should also be noted that the GOSL who is now responsible for issuing change orders (the UNRPNRE who are the engineers to the project refused to issue any change orders to the well drilling contractor), is well aware of the constraints of the budget. Additionally, Brinley Selliah of RDO/C continues to keep a very close eye on the budget.

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Recommendation: That you approve the increase in costs of the Geothermal Water Supply Pumps (4 No) procurement and sign the Attached Implementation Letter to the Government of St. Lucia which informs the Government of this approval.

Approved: _____

Disapproved: _____

Date: _____

Attachment: As Stated

Drafted by: ^{BOX}GE:BDSELL:ah:jc:01/09/87

Clearances:

C/ENGR:JDBaird	(In Draft)	Date:	<u>01/09/87</u>
PDO:MGHuffman	(In Draft)	Date:	<u>01/12/87</u>
C/PDO:KAPinan	(In Draft)	Date:	<u>01/12/87</u>
CONT:RLWarin	(In Draft)	Date:	<u>01/13/87</u>
RLA:TBCarter	(In Draft)	Date:	<u>01/12/87</u>

ACTION MEMORANDUM FOR THE DEPUTY MISSION DIRECTOR, RDO/C

FROM: GE, Brinley D. Selliah

I.L. - 18

Action Requested: 1) That you approve the Government of St. Lucia's (GOSL) estimate for the extra road works at the Calvaire/Coubaril Corner, Soufriere; and 2) that you sign the attached Implementation Letter which (a) approves the estimate for the extra road work; and (b) formally confirms the verbal approval given for road works carried out in 1986.

Discussion: There are differences in US dollar amounts given by the GOSL and those recorded in this memo. This is due to the GOSL using a conversion rate of US\$1.00 = EC\$2.70 while RDO/C uses a conversion rate of US\$1.00 = EC\$2.6882. However, this does not affect the accounting procedures since all accounts for the civil works are kept in EC dollars and payments by RDO/C are made in EC dollars.

By Implementation Letter No. 16, RDO/C approved the harbor works needed for offloading the drilling rig.

The GOSL has now submitted an estimate for carrying out the extra works required at the Calvaire/Coubaril Corner in Soufriere. The extra works became necessary after the drilling contractor, Big Chief Drilling Company, visited the site and requested that the corner be further improved to accommodate their rig transporter.

Under the Grant Agreement signed in August, 1985 between USAID and the GOSL, USAID is responsible for financing the roadworks necessary for transporting the drilling rig. The most expeditious and financially reasonable way of carrying out this work was determined to be the GOSL's Ministry of Works via the Crown Agents construction team.

The GOSL has now submitted an estimate of \$43,318.57 (EC\$116,449) for carrying out the improvement works at the Calvaire/Coubaril Corner. Visits to the site and discussions with the GOSL and Crown Agents staff reveal that the estimate is a reasonable one. It should be noted that a proposal by a private contractor to realign the road at this corner was priced at around EC\$229,000.

The improvement to the Calvaire/Coubaril Corner will include extending the culvert with an ARMCO culvert, a headwall, earth excavation and filling operations, construction of a flat cambered curve and surface dressing. The estimate refers to a culvert extension of 12 feet. It is in fact 17 feet. However, the cost remains unaltered.

In April/May, 1986, RDO/C officers verbally approved a GOSL estimate for \$65,681.12 (EC\$176,564) for road works. This estimate was not confirmed by an Implementation Letter since the estimate kept being revised due to an evolving situation concerning the transportation of the rig and other equipment and materials to the site. In fact at one time the use of helicopters to transport some of the heavier and larger equipment was considered. Finally it was decided that the only way to get all the equipment and materials to the site was to land at Soufriere and use the existing road, after alterations were carried out. The GOSL carried out the works and claimed reimbursement of US\$111,111. However, since RDO/C had an estimate for \$65,681.12, only \$65,000

was approved and paid under GOSL 1034 submission for US\$111,000. The GOSL has now completed a detailed bill of works for all the roadworks carried out to date, including the Calvaire/Coubaril Corner. In view of this, there is now a need to confirm in writing RDO/C's verbal approval, thus setting the scene for review of the entire claim. Therefore, this confirmation of approval is included in the attached Implementation Letter.

The budget of the Grant Agreement in Item (2) allows a sum of US\$170,000 for Civil Works. A breakdown of the sums accrued is as follows:

	<u>U.S. Dollars</u>
Road Works - Paid to Date	65,000.00
Harbor Works (EC\$81,000) - Paid to Date	<u>30,131.69</u>
Total Paid to Date	95,131.69
Total Allowed in Grant Agreement Budget	170,000.00
Balance Available	74,868.31
Amount Now Requested for Extra Works at Coubaril Corner	43,318.57
Amount Available after Payment for Extra Work at Calvaire/Coubaril Corner	<u>31,519.74</u>

Recommendation:

1. That you approve the extra works amounting to US\$43,318.57 required at the Calvaire/Coubaril Corner.
2. That you confirm the approval of the original estimate of EC\$176,564.
3. That you sign the attached Implementation Letter which states the above.

Approved: _____

Disapproved: _____

Date: _____

Attachment: As Stated

Drafted by: CR:RDSullivan:jc:02/11/87

Clearances:

C/ENCR:JDBaird	(In Draft)	Date: <u>02/11/87</u>
PDO:MGHuffman	(In Draft)	Date: <u>02/12/87</u>
C/PDO:KAFinan	(In Draft)	Date: <u>02/12/87</u>
CONT:RLWarin	(In Draft)	Date: <u>02/17/87</u>
REA:TBCarter	(In Draft)	Date: <u>02/18/87</u>

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ACTION MEMORANDUM FOR THE DEPUTY DIRECTOR, RDO/C

FROM: ^{POK} GE, Bridiey D. Selliah

1.L. - 23

Action Requested: That you approve expenditure from Item 2 - Civil Works of the Financial Plan of the Grant Agreement for road works, under the St. Lucia Geothermal Project (538-0137).

Discussion: (All conversions at US\$1.00 = EC\$2.6882).

Item 2 - Civil Works (Harbour, Roads and Bridges) of the Financial Plan of the Grant Agreement between USAID and the Government of St. Lucia (GOSL) obligate an amount of US\$170,000 from USAID funds for road, harbour and bridge improvements. These improvements are required to facilitate transporting and servicing the drill rig and ancillary equipment during the geothermal well drilling program.

Under this item RDO/C has approved the following works and the amounts have been both earmarked and committed:

Harbour Works IL No. 16 (EC\$81,000)	US\$ 30,131.69
Road Works IL No. 18 (EC\$293,013) dated 2/20/87	US\$108,999.70
Total Amount Earmarked and Committed	US\$139,131.39

The unearmarked balance available from Item 2 of the Financial Plan is as follows:

Amount Obligated in Item 2 of the Financial Plan	US\$170,000.00
Amount Earmarked and Committed by RDO/C to Date	US\$139,131.39
Unearmarked Balance Available	US\$ 30,868.61

By letter dated August 1, 1986, the GOSL submitted a voucher amounting to EC\$300,000. However, at that time RDO/C had verbally approved estimates for only EC\$176,564. Therefore, a payment of US\$65,000 (EC\$174,733) was made and the GOSL was advised to submit in estimate form, details of all the work carried out on the roads in support of the GOSL voucher dated August 1, 1986. This has now been done (see GOSL letter dated February 6, 1987 and attachments). A summary of the costs follows:

Roadworks

Belfond Road	EC\$ 72,222.80
Calvaire/Coubaril Soufriere	126,421.80
Trou Viant	4,732.11
Stonefield Bend	8,153.87
Access Road to Etangs	<u>98,508.75</u>
Sub-Tota	EC\$310,039.33
Extra Works on Calvaire/Coubaril Corner (IL No. 18)	EC\$ <u>116,449.00</u>
Total	EC\$426,488.33

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Less Contingencies not Detailed	28,185.39
Less Amounts Already Earmarked and Committed by USAID (IL No. 18)	293,013.00
Excess of Costs Claimed over Amount Earmarked and Committed by USAID	EC\$105,289.94 US\$ 39,167.45
Unearmarked Balance Amount Available in Line Item 2 of Grant Agreement Financial Plan (see Previous Paragraph)	US\$ 30,868.61

The GOSL has incurred expenditures greater than what is available in the budget. This was mainly due to the extra road works required at the Etangs site, the Belfond Road and the Calvaire/Coubaril Corner. The Project Contingencies Line Item of the Financial Plan as a whole has only US\$88,930 left and should not be used to cover this excess because the recommended approach is to approve expenditure in the sum of US\$30,868.61 (balance available from Line Item No. 2) and consider the matter once again if and when extra funds become available. The GOSL will therefore be asked, in effect, to absorb a) the amount of the excess over AID Budget (US\$8,298.84); and b) the amount of contingencies not detailed (EC\$28,185.39 = US\$10,484.86), or a total of US\$18,783.70. Our disallowance of this amount will be reviewed at the time of project amendment design.

Recommendation:

1. That you Approve the earmarking and commitment of US\$30,868.61 (balance available) from Item 2 - Civil Works of the Grant Agreement Financial Plan for road works required to move the drilling rig and equipment.
2. That you sign the attached Implementation Letter to the GOSL giving USAID's approval for this expenditure.

Approved: _____

Alfred Bessant

Disapproved: _____

Date: _____

4/27/87

Attachments: As Stated

Drafted by: *BDS* GE:BDSe/Eliah:jc:04/01/87

Clearances:

C/ENGR:JDBaird	(In Draft)	Date: 03/03/87
PDO:MGHuffman	(In Draft)	Date: 03/03/87
C/PDD:KAPinan	(In Draft)	Date: 04/07/87
A/CONT:GCavanagh	(In Draft)	Date: 04/16/87
RCO:SDHeishman	(In Draft)	Date: 04/06/87
RLA:TBCarter	(In Draft)	Date: 04/03/87