

关于浪洋水电站工程建设投资超概算的情况报告

荔波荔都水电发展有限责任公司：

贵公司正在建设的荔波浪洋水电站，工程设计概算总投资为 12771 万元。工程设计以及主体工程土建、金属结构和机电设备安装工程（含设备采购及相关临时工程），由贵州省水利水电勘测设计研究院总承包，合同总价为 11379.7 万元。其余 1391.3 万元投资由荔都公司负责。目前工程大坝已经基本完成，引水隧洞开挖已完工，现正进行砼的浇注，主副厂房已经浇注到吊车梁高程。由于物价上涨、设计调整等诸多原因，造成目前工程投资增加，工程资金供应不足，随时有停工的危险。本着对业主负责的态度，做好工程的投资计划，我项目监理部对目前已超过概算部分进行统计分析并对总投资作出了预测，分述如下：

1 已超概算部分统计

1.1 价差调整及机电设备价格上涨

现市场主材及设备价格大幅度上涨，而工程设计概算中未列价差预备费。签订总承包合同时已约定对承包方给予合同价款调整（总承包合同第十六条）。现工程已补材料价差为 709.4 万元；机电设备概算中价格为 2700 万元，现机电实际发生价格 3340 万元，增加投资为 640 万元。所以本项概算投资增加为： $709.4+640=1349.4$ 万元。

1.2 设计漏项

1.2.1 110kV 送出工程

浪洋水电站 110kV 联网送出工程项目未列入工程设计概算。从浪洋水电站 110kV 升压站至荔波变 33km 输出线路建设（含荔波变

110kV 间隔及电站施工期临时降压站)。投资为 720 万元。

1.2.2 场外道路改造工程

荔波县瑶山乡至电站所在地捞村乡 16km 乡村公路,在施工期不能满足施工运输要求。对该路段进行局部拓宽及弯道改造,投资达 142.3 万元。

1.2.3 三通一平工程设计漏项及修改

三通一平工程设计概算为 395 万元。现实际支付为 622.8 万元,增加投资为 227.8 万元。

所以因设计漏项造成的概算投资增加为:

$$720+142.3+227.8=1090.1 \text{ 万元。}$$

1.3 地质原因引起的投资增加

1.3.1 由于地质情况较差,加上连续降雨,造成调压井在施工过程中发生跨塌,设计单位已提出设计两个方案,现正按照第二种方案进行施工,投资为 512 万元。

1.3.2 厂房后边坡地质情况较差,加上受到降雨的影响,开挖过程中引起后边坡开裂,对附近农民生产和生活造成了一定的影响,现在已发生工程处理费用和农民的补偿费用分别为 264 万元和 94.4 万元。

所以因地质原因造成的投资增加为: $512+264+94.4=870.4$ 万元。

1.4 工程延期问题

工程原计划为 2005 年 5 月发电,因设计变更、地质情况不好等原因造成工期延误,经过调整后工程计划于 2006 年 4 月发电,工期延误 11 个月,造成监理费用增加 40 万元,建设方增加管理费用 200 万元。所以因工期延误造成投资增加 240 万元。

1.5 洪水损失

浪洋水电项目于 2004 年 8 月遭受洪水袭击, 估算损失约 590 万元。

所以综合以上统计, 工程概算投资目前已增加约 4139.9 万元。(后附统计表)

2 预测将来的超概算部分

本工程调整后的发电工期为 2006 年 4 月, 由于本工程的大部分土建工程已基本结束, 只剩下引水发电隧洞在进行砼浇筑, 厂房在进行上部结构的砼浇筑和即将进入机电设备的安装, 以及一些零星的土建工程, 所以监理工程师预测将会发生的费用如下:

2.1 主材补差

土建工程及金属结构工程目前已完成了总量的 85%, 所以预计补差将还会增加: $709.4/85\% \times 15\% = 125$ 万元。

2.2 机电设备部分

目前主要的机电设备已采购完毕, 但采保费 2.5% 还没计入, 计入采保费后金额为: $3340 \times 2.5\% = 83.5$ 万元。

2.3 工程延期承包人费用

因工程延期造成已增加的费用中只计入了监理和项目业主的费用, 承包人的增加费用因其还没有上报所以很难确定, 目前承包人投入在现场的施工设备保守估计不低于 500 万, 考虑 10% 的残值, 10 年折旧, 则每月的折旧费为 3.75 万元; 投入的施工人员平均为 300 人, 按平均月薪 800 元计算, 每月工资 24 万元, 每月承包人的这两项支出为 27.75 万元。由于工程延期 11 个月的原因很难界定, 按项目业主和承包人各承担 50% 责任来计算, 本项投资将会增加: $27.75 \times 11 \times 50\% = 152.6$ 万元。

所以本工程预计还会增加投资： $125+83.5+152.6=361.1$ 万元。

3 总超概算费用

综上所述，本工程完工保守估计将会超过概算投资为：

$4139.9+361.1=4501$ 万元。☺

为了保证工程建设的顺利进行，请贵公司应做好追加资金投入准备。

长江委监理中心浪详水电站工程建设监理站

二〇〇五年十二月三十日



2005年12月30日之前投资增加统计表

序号	名称和支付项	金额(万元)	备注	数据来源
一	主材补差款	709.4078	在施工过程中,水泥,钢筋等主材涨价	材料差价支付单
1	第一期支付	2.897		
2	第二期支付	317.37		
3	第三期支付	248.82		
4	第四期支付	79.38		
5	第五期支付	60.9408		
二	机电设备投资增加款	640	2005年12月30日之前的机电设备购买合同总金额3340,可研概算中机电设备为2700万,超出概算640万元。	机电合同
	机电合同合计	3340		
1	封闭母线	62.75		
2	电力变压器	142.6		
3	互感器	6.59		
4	避雷器	3.64		
5	电压互感器	2.4		
6	电压互感器	16.2		
7	LCU模板	4.33		
8	消防系统	15.75		
9	电缆桥架	7.32326		
10	电缆附件	40.670865		
11	水电站综合自动化系统	127.85		
12	水力量测系统	7.3		
13	压力变送器	1.35		
14	压缩空气检测表	0.42		
15	断路器	70.55		
16	起重机	94.8		
17	空调通风工程	31		
18	水轮机组	2534		
19	灯具	2.0343		
20	开关柜	60.2433		
21	低压柜	29		
22	空压机设备	24		
23	油罐及过滤机	13		
24	变压器	28.28		
25	深井泵	13.8		
三	110KV线路	720	设计中没有考虑	110KV送出线路
四	调压井垮塌处理款	512	工程采用方案二进行施工	调压井垮塌处理方案
五	厂房后边坡开挖工程量12万方	264	厂房上部边坡开挖12万方,参考工程中的滑坡堆积体开挖单价为22元/方。	浪洋厂房上部边坡处理设计报告

六	厂房后边坡开挖垮塌补偿	94.3965	在施工过程中厂房后边坡开裂，造成补偿费用。	厂房后边坡开裂补偿资料
1	厂房地质灾害的补偿和疏散赔偿	23.4		
2	厂房地质灾害造成房屋拆迁的补偿	71		
七	洪水损失	590	由于连降暴雨，引发洪水	洪水损失
七	管理费用	200	工程计划2005年5月发电，现估计工期将拖延11个月，增加管理费用200万。	浪洋建设方管理费用增加说明
八	三通一平	227.8	三通一平实际支付为622.8万元，概算中为395万，增加227.8万元	三通一平付款单
九	场外道路拓宽	142.33	由于工程需要，设计外的道路拓宽工程	场外道路拓宽工程
1	黔南州交通建设合同	96.7		
2	荔波县县乡公路管理所合同	10.73		
3	中铁十七局合同	34.9		
十	监理费用增加	40	由于工程延期增加的监理管理费用	监理合同补充协议
合计		4139.9		

Report on the Excess over Budget Estimate for Construction of Langxiang Hydropower Station

30th Dec.2005

Libo Lidu Hydro Power Development Co., Ltd.,

According to the project design, the budget estimate of total investment for Libo Langxiang Hydropower Station (hereafter: referred the project) was RMB 127,710,000 Yuan which is presently under construction. The project design, the construction of the main structure, the works of metal structure and the installation of electromechanical equipment (including purchase of equipment and relevant temporary construction) is contracted generally by Guizhou Survey and Design Academe for Water Resources and Hydropower, and the total contract value is RMB 113,797,000 Yuan. The remained amount of RMB 13,913,000 Yuan is further implemented by Libo Lidu Hydro Power Development Co., Ltd. By this time, most of the dam was completed, and the digging of diversion tunnel was completed and concrete works of the diversion tunnel is in construction now, the concrete works of main and auxiliary power houses have been built to the height of the crane beam. However the investment of the project has been increasing due to the rising construction materials price, the adjustment of project design and so on. There are always the shortage of capital and the possibility of construction stop. Being responsible to the owner for the project, and for a more proper investment plan of the project, we has made the statistics and analysis on the current excessive amount over original budget estimate, and the further estimate of total investment, which are shown as follows:

1. Statistics of the Excess over Original Budget Estimate

1.1 Adjustment of Price Difference and Rise of Electromechanical Equipment Prices

The prices of main materials and equipment have been increasing greatly, while no prepared amount for price difference were listed in the budget estimate on the design. The adjustment of the contract value is agreed when the general contract was signed (Article 16 of General Contract). The amount for price difference of main materials is RMB 7,094,000 yuan. The original budget estimate of Electromechanical Equipment is RMB 27,000,000 yuan, and the actual is RMB 33,400,000 yuan, the difference between the actual and the estimated is RMB 6,400,000 yuan. Hence investment shall be added RMB 13,494,000 (7,094,000+6,400,000).

1.2 Leak in Design

1.2.1 110kV power output works

The 110KV power output works of the project has not been listed in the budget estimate for design. An investment of RMB 7,200,000 yuan will be required for the construction of 33km power line from the 110kV booster station in the project to Libo transformer substation (including the intervals of Libo 110kv transformer substation and the temporary transformer substation during construction).

1.2.2 Reconstruction of road to the site

The 16km rural road from Yaoshan Township of Libo County to the site of the project was not satisfied the requirements for transportation during the construction period. An investment of

RMB 1,423,000 yuan is needed for partial widening of the road and reconstruction of the road curves.

1.2.3 Leak and improvement in design related to the water supply, electric power supply, road and flatting workplace

The budget estimate for design related to the water supply, electric power supply, road and flatting workplace is RMB 3,950,000 yuan. An amount of RMB 6,228,000 yuan has actually occurred, an added investment of RMB 2,278,000 yuan is needed.

Therefore, the total added investment caused by design leak is RMB 10,901,000 (7,200,000+1,423,000+2,278,000).

1.3 Added investment caused by geological reason:

1.3.1 Owing to the inferior geological conditions and the continuous rainfall, the surge shaft experienced collapse during construction. The design department provided two scenario, and the construction is underway as per the second one with the investment of RMB 5,120,000 yuan.

1.3.2 Owing to the inferior geological conditions of the side slopes behind the power house and the influence of rainfall, the crack on the rear side slope happened during the excavation; it caused certain influences on the production and living of farmers nearby. The expenses of RMB 2,640,000 yuan for engineering treatment and the compensation of RMB 944,000 yuan to the farmers have occurred.

To sum up, the investment added caused by geological reasons is RMB 8,704,000 yuan (5,120,000+2,640,000+944,000).

1.4 Delay of Project

The project was originally scheduled to start power generation in May 2005. However, the power generation was delayed to owing to design modification, inferior geological conditions, etc. According to the modified schedule the project will start power generation in April 2006. The delay of 11 months has caused the added investment of RMB 2,400,000 yuan, including the added supervision expense of RMB 400,000 yuan and the added managerial expense of project owner of RMB 2,000,000 yuan.

1.5 Loss by Flood

The project suffered a flood attack in August 2004, causing a loss estimated at approximately RMB 5,900,000 yuan.

Considering the above mentioned statistics, an amount of about RMB 41,399,000 yuan has been added to the budget estimate for this project. (Statistic table attached).

2. Estimated Excess over the Budget Estimate in the Future

The modified date to start power generation is April 2006. By this time, most of the project civil works have been completed; the remained are the diversion tunnel concrete works, the concrete works on the upper parts of the power house, the installation of electromechanical

equipment, and some minor civil works. The supervision engineer estimates that following extra expenses will occur:

2.1 Compensation of Price Difference of Main Materials

The 85% of civil works and metal structure works have been completed by this time, the estimated Compensation of Price Difference of Main Materials shall be added RMB 1,250,000 yuan($7,094,000/85\% \times 15\%$)

2.2 Electromechanical Equipment:

The purchase of main electromechanical equipments was completed. The expenses of purchase and storage with the amount of RMB 835,000 yuan ($33,400,000 \times 2.5\%$) shall be counted.

2.3 Expenses of the contractor caused by delay of project

Firstly, the construction equipment used on the site by the contractor was valued conservatively at more than RMB 5,000,000 yuan, considering the 10% residual value and 10 years depreciation period, the monthly depreciation cost is RMB 37,500 yuan. Secondly, there are average 300 construction personnel working on the site whose average monthly salary is RMB 800 yuan, the total monthly salaries of them will be RMB 240,000. These added expenses mentioned above will be undertaken averagely (50% for each one) by the project owner and the contractor since it is difficult to determine their default to the 11 months delay. The sum of added investment caused by the reason is RMB 1,526,000 yuan ($277,500 \times 11 \times 50\%$).

To sum up, the investment added in item 2 is RMB 3,611,000 yuan ($1,250,000+835,000+1,526,000$).

3. Total Excess over Original Budget Estimate

In conclusion, an amount of RMB 45,010,000 yuan ($41,399,000+3,611,000$) will be added according to a conservative estimate.

In order to ensure carrying the project out successfully, the project owner should get ready to increase reinvestment.

Changjiang Water Resources Commission Supervise Centre Langxiang Project Supervise Station