

## RSO&E Engineering Support Man Hour Estimate

Date: August 8, 2006

Project: KIF Ash Pond Enhancement - CO2 and Liquid Lime Injection Systems

Discipline: Civil & Mechanical

### Phase I Scope:

Provide Mechanical Engineering design support for the installation of a new CO2 and Liquid Lime Injection systems along with other respective ancillary features. All design documents to be prepared per TVA DCN process and in accordance with Fossil & Hydro design standards.

- Civil Design
  1. Initiate Plant contact regarding system location: (24 hrs)
  2. On site Meetings - 6: (36 hrs)
  3. Site visit(s): (40 hrs)
  4. Prepare Preliminary Location Study for CO2 & Lime Injection Systems: (80 hrs)
  5. Project Telecoms: (30 hrs)
- Mechanical Design
  1. Meetings: (50 hrs)
  2. Preliminary Calculations: (40 hrs)
  3. Preliminary Physical System Layout: (40 hrs)
  4. Process & Instrumentation Diagram (P&ID) Drawing(s): (85 hrs)
- Miscellaneous project coordination/support: (40 hrs)
- \*\* Initiate Tank Specifications ( CO2 & Lime): (80 hrs)

\*\* Phase 2 Work Performed during Phase 1 due to "long lead time" for system component(s)

### Assumptions:

1. Tank Procurement will be performed by others
2. The Phase I P&ID will be approved by F&PG prior to developing the Phase II system design documents

### Budgetary Cost Estimate:

- **Projected TOTAL: 545 Hours**

**Gray, Jeff**

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**From:** Dixon, Melisa D  
**Sent:** Tuesday, August 08, 2006 2:59 PM  
**To:** Gray, Jeff  
**Cc:** Lennon, Kendal R; Dixon, Melisa D; Shaffer, Douglas P; Knight, Tony Alan  
**Subject:** KIF CO2 & Lime Injection Systems Engineering Support & Man Hour Estimate

Hi Jeff,

Please find attached the subject document. We have been meeting, working, and thus charging to the KIF CO2 and a liquid lime injection system project (short code 001FT3S) without a defined RSO&E Engineering Support Scope of Work. As typical of our group, we work the 3 Phase process and provide the customer with a scope of work and budgetary estimate for each of the respective phases. This way we can keep a better handle on our deliverables and budgetary expectations. All this having been said, the estimated man hours for Phase I support reflected on the attached are somewhat higher than that of JSF. The basis for the increased hours is that KIF Staff have requested we perform the task necessary to install a CO2 and a liquid lime injection system. Please review and provide comments as necessary.

Note that Chemical Engineering (Tony) man hours are not included in the attached. I suspect his time will be similar (slightly higher) than that of JSF due to the addition of the liquid lime injection system. Currently, Tony is out of pocket. Upon his return, we will have him clarify his scope of work and provide you the necessary man hours for chemical engineering support for the subject project.

Lisa

09/05/2006

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