

Contracting 3rd Party
Major Maintenance
Field Services

K Pope & W Davis

- Pros and Cons of using 3rd Party Field Services
- Developing a Bidders List
- Developing a Scope of Work & Services
- The Bidding Process
- Bid Evaluation
- Outage Execution
- Problems and Pitfalls

- Pros:
 - Reduced Costs
 - Competitive Bidding Drives Costs Down
 - Non-OEM Scope of Work/Services can Drive Costs Down
 - Extended service life over OEM recommendations
 - Accelerated Schedule
 - 3rd Party More Likely to Work to Your Schedule than their “standard” Schedule
 - Requires alignment with the selected shops in advance of large outages
 - Better Parts Discipline
 - “Don’t throw away those seals!” Retain old parts for future refurbishment & allows flexibility to use aftermarket alternatives

- Cons:
 - Loss of OEM Field Service Engineer
 - Contract Separately? There are success stories where the primary contractor for an outage service was a third party and the owner/operator contracted a GE FE separately
 - Potential for Reduced OEM Home Office Engineering Support. Also known as PAC. Network and know where viable alternate sources are available.
 - Potential for Reduced OEM Emergency Parts Support. Know the market! 3rd parties offer nearly every aspect of today's power plants.
 - Finger Pointing if Post Outage Problems Arise. Be prepared by having the scope/responsibility matrix agreed to by your company. Engage accounting, legal, management, and other departments to ensure collaboration. Weigh the risks as they are determined in a "risk & contingency plan".

- **Canvas the Field for Viable Service Providers that offer the required services**
 - Industry Contacts
 - Unsolicited Offerings (Most successful companies capable of offering strong services know the market and make contact routinely. Especially if a successful service has recently been completed)
 - Industry Trade Shows (Again the viable and stable companies will be marketing at trade fairs)
 - Industry Publication Advertisements
 - Combined Cycle, Power Magazine, Turbomachinery, others
 - Conferences, CTOTF, 7F, 6F, ASME Power, others

- **Provide Potential Bidder with Info on your Needs, Schedule, & Approach**
 - Needs Definition
 - e.g. Frame 6F CI, HGP, MI
 - Schedule
 - When - Ensure that the selected service provider has resources to support
 - Duration – Limit schedule activities to one shift or less helps to monitor progress
 - Approach
 - Scope/Responsibilities will be defined by you and not the OEM
 - BIDDING WILL BE BY EXCEPTION (Unless Bidder Specifically takes Exception to an item in your Scope/Responsibilities Document, it's in the Bidder's Scope)
 - You may or may not supply an OEM Field Service Engineer to look over the Bidder's shoulder
- **Probably a Good Time to Provide Bidder with Your T's & C's**
 - Nip any Deal Killers in the Bud. Legal departments will need time to review, negotiate, and finalize T&C's

- **Minimum Information to Get From Potential Bidders**
 - Specific Machine/Outage Type Experience - Request sample reports specific to your requested scope.
 - Proposed Outage Supervisor Name/Experience - Does the service provider have multiple supervisors and or technical directors for depth? An organization chart from the service provider should be readily available. After all if they don't have there organization organized how effective will they be with your service needs.
 - Safety Program & Safety Record (Contains the company specific performance)
 - Quality Program – Have them produce QA/QC hold points for inspection.
 - Training Program / Training of the craft - Important and is often overlooked.
 - Industry References - Ask for a two year summary from the provider and select references that you want to contact. Asking for references will often result in the provider giving you the contact info from a select few.
 - Tooling Rent, own, calibration records, tool inspections and the inspection criteria
 - Lift Plans are a necessity to reduce error and to increase efficiency
 - Field procedures for disassembly & assembly

- **Document Everything**
 - Make sure you can justify why a potential Bidder didn't make the final list.
 - A decision matrix should be established before reviewing potential Bidders.
- **Max 4 Bidders (5 with OEM)**
 - A good decision matrix will allow developing a ranking and facilitate cutting off potential Bidders beyond 4.
 - Ensure that you know what you want. Full engineering support, parts and shop refurbishment if required, or a simple CI may only need field experience

- Elements Making Up the Work Scope Description
 - Narrative
 - 10,000 foot view of the work being performed (e.g. “The Bidder is requested to submit a proposal for a Combustion Inspection to be performed at the XXXX Power Plant. Work will be performed on 2 General Electric 6F Combustion Turbines. The outage is scheduled to begin on xx/xx/xxxx, with a duration of 7 days....etc.)
 - Itemized Workscope List (See Following Slide)
 - Detailed Responsibility Matrix (See Following Slide)

- Itemized Workscope Example
 - Combustion Inspection
 - Mobilization
 - Disassembly
 - Inspection
 - Completion
 - Auxiliary Work

 - See CI Work Scope Document

- Example Detailed Responsibility Matrix Example

Responsibilities

RESPONSIBILITIES	N/A	Contractor	CUST
1. Personal safety equipment.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Safety orientation for labor force.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. First aid facility & fire protection.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Isolate and tag out turbine-generator equipment.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5. Hole watch personnel for confined space work (maximum 1 person).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Fire watch personnel, if required & overall plant fire protection.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Fire watch extinguishers, if necessary, for turbine work area.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8. Monitoring equipment, and calibration thereof, for confined space work.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Trash containers & disposal of all materials used.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Wash facilities.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Sanitary facilities (Porta-cans).....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Change facilities for crew.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Prepare and Transmit Request for Proposal (RFP)
 - Cover Letter
 - Scope of Work (Previous Slides)
 - Level 1 Schedule
 - Safety Program Requirements
 - Insurance Requirements
 - Terms and Conditions
- Hold a Pre-Bid Meeting for All Bidders Together
 - Particularly Important if Bidders Haven't Previously Been to Site
 - Opportunity to Say it Once to Everybody (Safety, Site Control, etc.)
 - Most Bidders Will be Silent at the Meeting
 - Clarify that it's a Bid Process....not a Negotiating Process...Prevents Bidders from leaving "fat" in their bid to be negotiated down in a non-existent "negotiating" phase of the process. You will be clarifying a bid scope, not negotiating a bid price.
 - Stress that it's "Bid by Exception"....unless they specifically take exception to an item in the Scope of Work....it's in their scope.

- Provide the Opportunity to Schedule Individual Site Visits or Walk Downs
 - Bidders tend to open up when visiting the site individually
 - Helps insure that Bidders can't claim ignorance of "unknown" site conditions
- Provide a Single Contact for Specific Bid Clarification Questions
 - Document all Questions from Bidders
 - Make clear to Bidders that, unless specifically requested, questions from & answers to any one Bidder will be transmitted to all Bidders
- Be Specific on the Bid Submittal Date & Time
 - If One Bidder is given an extension, give all Bidders the same extension
 - The ideal submittal process insures all bids are submitted at the same date and time to guarantee there are no "leaks"

- Line up Costs for Base Work Scope
- Assume 10% Increase in Outage Duration & Add Associated Bidder Rates
 - Additional Duration Labor
 - Additional Duration Supervision
 - Additional Duration Tools
- Expect Creative Unsolicited Bid Alternatives
 - Most Common are Package Deals (e.g. Multiple CI's or HGP's)

- Create a Scaled Matrix of Non-Cost Items (This can be used as a tie-breaker)
 - Example with 1 = Poor, 3 = Average, & 5 = Very Good

Item	Bidder A	Bidder B	Bidder C
Quality of Past Work	3	3	2
Fr 6 Experience	5	4	3
Tooling	3	2	2
Proposal Clarity	4	3	3
Safety History/Program	1	3	3
Working Relationship	4	2	3
Engineering Support	3	5	3
QA Support	3	3	3
Overall Sum	26	25	22

After all the work with planning and evaluating this is where the selected company must perform. Ensure the site and the contractor are ready! Besides, you're both partners at this point.

- **Safety** must be planned in all aspects of the outage. Safe work practices, programs, documented procedures, etc. should all be part of the contractor service offering.
 - Outages requiring >25 craft personnel may require a designated safety professional. Determine in the responsibility matrix.
- **Resources** are required for the site to monitor activities and manage the outage to betterment of plant operations, performance, reliability.
 - Combine the site organization chart with the contractors to ensure clear lines of communication are established.
- **Roles and responsibilities** must be clear and concise. Ensure there is no ambiguity in the organization chart.
 - Contract field engineer for site management and QA/QC, etc.
- **Parts** must be reviewed and inspected weeks and months prior to outage start dates. The contractor should be on site well in advance of the outage to stage and prepare.
 - If the contractor has full shop services it will be an easier collaborative effort
- A **Site Plan** will be necessary to allocate real estate throughout various stages of the outage. There will be auxiliary work occurring in parallel with turbine outage and provisions need to be made along the way. The contractor must be aware of the parallel work as plan according to the bid package.
- **Schedule** adherence must be monitored closely to ensure no slippage. Remember to limit activity duration to one shift or less.
 - Will the site own the schedule or is this the contractors responsibility? Determine in the responsibility matrix.

- **QA/QC** must monitor critical dimensions and clearances
 - The service report should be basically a blank template awaiting population of critical data required to re-assemble the turbine
- **Shift Turn Over** is a critical time during execution. Ensure this process is understood by the site and contractor is meeting the expectations.
- **Close-out Plan** or **FME** must be used and monitored by the designated resource.
 - Does the contractor have a plan? The site should pre-determine the plan and have ready for the bid process.
- **Start-up and PMT** must be planned included in the bidding and planning.
 - Utilize a Risk & Contingency matrix to determine start-up risks and determine if the contractor can support those or if another is required.
- **Operational Performance** will be one of the final things observed from the outage perspective. This is where the work is realized and pay back begins.
 - Who owns the turbine performance monitoring? Determine in the responsibility matrix.
- **Cost Tracking** may be required based on the depth of the scope and level of effort required.
 - This process should be owned by the contractor but monitored daily or weekly at a minimum by the site.
- **Final Report** formats must be easily understood and retain all critical information.
 - Again these should be blank templates that the field engineers and supervisors are populating with data in real time. Field sheets, often referred to as “dirty sheets” should be maintained even after transfer to the electronic report.
 - A recommendations section should be required. This will be important when planning the next turbine outage. Start planning right then,,,
- Conduct a **Lessons Learned** review with the contractor post outage.
 - This ensures that all activities that were “missed” during the planning stages are now included in future planning. This pays big benefits when managing large fleets.
 - Provide and receive critical feedback. The contractor must be informed of weaknesses to ensure remedy and readiness prior to the next execution. Same applies to the site!

- Utilizing a 3rd party contractor for outages can mean less OEM technical data available for use.
- If the site does not have full time staff to handle technical review and decisions then the OEM or another alternate engineering source may need to be contracted.
 - The 3rd party non OEM engineers typically have years of experience and can resolve most field issues. *See example of MDA Engineer next slide.*
 - *Network to find viable alternatives. It's a fairly small world and users can share experiences to the betterment of all.*
- Being a self managed site does require added effort. No more turning the keys over to the OEM when its outage time.
 - *Ensure the site resources are engaged and ready to execute.*

- MDA will provide one Field Engineer for mechanical disassembly and reassembly of Gas Turbine 297365 during the October 11 thru November 23, 2009 outage. The engineer shall have proven experience with the scope of major inspection on a General Electric Frame 6 turbine and generator as well as auxiliary equipment.
- The engineer is responsible for representing the site as technical supervisor. Responsibilities will include clearance review, technical direction, special tool functionality / use, alignment review, lift plan review, turbine / generator disassembly, turning gear disassembly/reassembly, and parts inspection / review.
- The engineer shall mobilize on October 7, 2009 and remain on site for the duration of the outage. The planned business outage duration is 43 days starting on Sunday October 11, 2009 and ending November 22, 2009.
- The hours of service will be Monday thru Sunday starting at 7am and ending at 6pm with a one hour lunch break. The work week is planned to include one day off for rest.
- Site will provide the engineer an office area in the Outage Control Center.
- The dates and hours of service may vary in the event of emergent work and subsequent schedule change.

- As the fleets mature so do the 3rd party service providers.
- Fleet experience with E class turbines indicates that a progressive confidence level is obtained as the 3rd party providers obtain more contracts.
- *Field service key performance factors are;*
 - *Experienced craft labor lead by,*
 - *Experienced Supervision directed by,*
 - *Experienced Project Management. All evaluated deliberately to ensure quality service.*
- *Technical Direction can be contracted inside or outside of the 3rd party services. The site must evaluate the level of effort required based on full time staff experience.*
- *Utilize a planning company to assist with the outage planning. Even the planning itself can be managed through a 3rd party company that does just that. Some non OEM's can offer the total package of mini maintenance contracts to cover a particular service interval such as CI's, HGP, or more. There can be negotiated benefits in mini contract agreements and some will even level payments.*
- *With proper planning and selecting the 3rd party contractor market can be and is a viable alternative to the OEM.*

- <http://www.turbomachinerymag.com/>
 - May/June “Choosing Third Parties” Dave Lucier
 - March/April Upgrading F Class – The Gas Turbine Aftermarket
- www.energy-tech.com
 - May 2010 “Optimize turbine-generator inspections maintenance overhauls”
- www.combinedcyclejournal.com
 - 4Q09 “Paradigm Shift” John Duff