

## SERVICE BRIEF:

# User Centered Field Operator Staffing Assessment

### The Situation:

Traditionally, Field Operator Staffing levels have been determined by various methods that tend to be highly subjective and lead to overstaffing.

In many facilities the staffing levels are set through evolution of the process and negotiation with the labor force. This method has obvious drawbacks, since the workforce typically is not concerned with optimizing expenses.

Some human factors consultants use, instead, time and motion studies. This method employs old-fashioned task analysis along with random sampling to physically measure workload by observation. The work is then categorized into groups such as administration, inspection, laboratory, maintenance, operational tasks, etc. Unfortunately, those being observed often change their behavior and look busy because someone is observing them, or the observations do not take into account all aspects of the job being studied. While this method may deliver information, it is too easily biased.

### The Solution:

User Centered Design Services has developed a methodology that truly measures the operator's workload for both dedicated field operators and inside/outside operators, or those with both field and control duties. This method is broad-based, fact-centered, highly objective, immune from bias by daily problems, and comparable across the plant and across the industry.

#### **THE METHOD:**

Our method is based on a three-part model that includes Equipment Complexity, Controls and Automation, and an Additional Work Study.

First is the Equipment Complexity model. The field operator workload is affected by the type and complexity of the equipment being

monitored. Large amounts of rotating or fired equipment or equipment that handles highly toxic materials makes an outside job more difficult than tending drums and columns. To account for this variation, we assign a score to different types of process equipment and different classifications of materials being processed. This metric accounts for normal time required to perform monitoring and minor maintenance. For each unit, we develop an equipment model and determine a score.

The second model is Controls & Automation Impact, which considers the operator's role either as a dedicated or inside/outside position, and the level and quality of the automation. The level of automation in a plant also has a large impact on the human resources required to operate the plant safely. To estimate the level of automation in the plant, we compare the amount of equipment under the operators' control and the number of controllers in the area. We generate a numerical score for each unit.

The third model is Additional Work Study. Some duties assigned to field operators are not well represented simply by the equipment under their control. To account for this, we interview Operations personnel, preferably supervisors and hourly operators, to catalog significant additional tasks assigned to the field operators. These might include loading or unloading trucks or rail cars, analyzing unit samples, regenerating dryers, cleaning or replacing process filters, taking unusual amounts of equipment readings, taking unusually large numbers of process samples, long travel times to equipment, or many other variables. Since this list is derived from discussion, and verified through supervision, it is far less likely to be biased.

By combining the scores from the Equipment Complexity and the Controls & Automation Impact studies with the time derived from the Additional Work Study we determine a single, normalized value for each position. These scores provide a rational basis for comparison across the facility. The model also provides us with the ability to mix and match units, and generate fact-based models for possible realignment and consolidation cases. We can develop multiple scenarios with predictable workload factors. We can also use this model to

determine the additional workload created by a new unit, and determine the best field operator position to take on the additional workload.

Using the scores from the models, we also can benchmark Client positions versus their peers, industry standards and best in class performers using our extensive database of workloads. This provides an objective and rational benchmark for analyzing staffing realignments and consolidations.

### **The Process:**

The typical process for performing a Field Operator Staffing Assessment consists of a few preliminary conversations to determine the particulars of the study. We can apply this methodology to a single position, an entire facility or all facilities throughout a Client's system. The study can be done openly (including interviews with operators), or discretely (with interviews involving only management and supervision) depending on the client's situation.

**Data Collection.** As the Client, you will need to provide the following:

- Basic site data, including the number and type of units, the current operations team structure (who works where and who controls what).
- A complete set of current P&ID drawings for the Equipment Complexity model. We can use PFDs, but prefer P&IDs. Some consultation with engineering should be budgeted to answer questions relating to the drawings. This is typically not more than a few hours of the Client's time.

After this initial data is collected and reviewed, we will schedule a site visit to perform the Additional Work Study. The number of UCDS personnel and the duration of the visit will vary depending on the size of the facility and the score of the study. Site visits typically range from one to two weeks and require two UCDS personnel. During the site visit, UCDS will interview Management, Supervision, Engineering and Operators. These interviews are typically an hour long. We prefer to interview Operators at their duty stations. This puts the operators more at ease, and minimizes scheduling issues and overtime costs for the Client. The Client should plan on a significant number of personnel being interviewed during the visit, and budget the internal cost appropriately.

After the site visit, UCDS will require a short period to analyze the data and generate a report. This report will contain a full analysis of the Client's field operator positions ranked across the site and benchmarked versus industry. It also will provide suggestions for possible realignments or consolidations. A reasonable number of iterations to examine other possible realignment or consolidation cases of the Client's choice are included in the study.

### **Benefits:**

In a typical oil refinery study, it is not unusual to identify field operator staffing reductions of 10% or more. At a typical \$500,000 duty station, the cost of our services can be recouped in a matter of weeks. In addition, when properly implemented (see below), these staffing reductions can result in reduced labor expenses while seeing improvements in normal operation, abnormal situation management and emergency response.

### **Related Services:**

If the Client identifies a realignment or consolidation case they wish to pursue, we strongly recommend follow-up with a **Management System Gap Analysis** and our **Management of Organizational Change Services**. These tools provide a strong foundation to ensure the proposed changes are safe and achievable, and that the entire process is fully compliant with industry standards, such as OSHA 1910, the Chemical Manufacturers Association *Management of Safety during Organizational Changes*, and overall good Management of Organizational Change practices. We can perform the **Management System Gap Analysis** concurrently with the **Field Operator Staffing Assessment** site visit, thus saving on travel and labor expenses. Please refer to the Service Briefs on these offerings for more information.

**Console Staffing Assessment** and **Work Team Design Assessment** Briefs outline additional services that are frequently of interest to clients along with the **Field Operator Staffing Assessment**.