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Information Technologies That Enable Competence Development and Assurance

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Abstract

Description of the Material

This paper describes the experience of an Abu Dhabi upstream operating company in the implementation of a competency assurance system for entry-level employees. The implementation and tracking processes which form the core of the system were designed with project management and engineering principles in mind. They therefore lend themselves to the technologies that project managers and engineers use, such as databases, project planning systems, and graphical reports and scorecards. The company's use of these technologies based on coupling clarity of business requirements with simplicity of IT solutions resulted in a rapid and successful implementation of the competence assurance system.

Application

This material is applicable to organizations considering or implementing a competence development and assurance system.

Results, Observations, and Conclusions

The methods described in this paper, derived and proven in practice, have helped the company:

- Monitor development progress,
- Be proactive in making interventions when needed to sustain progress,
- Quality control implementation and assurance processes,
- Ensure fair treatment of program graduates, and
- Manage performance.

As a result, the company has achieved a high success rate in moving employees through the system quickly and efficiently.

The paper will also describe how the engineered approach alone is not enough when developing human competencies. Effective marketing, leadership, reward, and knowledge management systems are also critical to successful implementation.

Significance of Subject Matter

As oil and gas companies strive to achieve performance excellence and meet tough HSE goals, the challenge faced by all is to find, develop and retain competent people. This challenge is magnified as the current employees' demographics alert high risk of skills dilution and when advances in technology drive renewed development efforts. Competence assurance processes that are structured, systematic, and measurable are important tools for companies to use for achieving this desired result.

Introduction

In 2004 and in response to the changing business climate affecting the oil sector since 2002, when oil prices began their steep climb to current record levels (U.S. EIA, 2007) the Abu Dhabi National Oil Company (ADNOC) created and introduced a new employee development and competency assurance management system to its upstream operating companies including ADMA-OPCO. ADNOC's Competence Assurance Management System (or CAMS, as it is commonly known) was designed to produce a competent workforce in an era characterized by major expansion of production capacity, an aging infrastructure requiring increased attention to facilities integrity, a workforce rapidly approaching retirement age,

and aggressive corporate nationalization goals (Matroushi, 2004).

The challenge to ADMA-OPCO is both real and urgent: the company must essentially replace much of its current workforce with a new and much younger one in the next 10 years, without loss of organizational capability. The CAMS system, with its discipline-specific development frameworks and rigorous assessment and verification process, is up to the task but only if it is implemented as the designers intended. ADMA-OPCO therefore has had to move quickly and effectively to develop and deploy robust planning, monitoring, and reporting tools to support the new system and ensure its success.

CAMS Process Design

As designed by ADNOC, CAMS is a detailed, highly structured employee development process focused, for now, on entry level employees. Beginning in 2003, ADNOC commissioned the preparation of CAMS development frameworks by teams of qualified technical experts from the upstream operating companies. The first frameworks were completed in 2004, when five were issued. Nineteen additional frameworks were issued in 2005-07. Frameworks are now available for all field operations, engineering, finance, information technology, human resources, and commercial disciplines.

The frameworks define the developmental goals for new university graduates enrolled in the CAMS program. They specify as many as 120 competencies a graduate must have to function independently in his or her discipline. These competency elements, as they are known, are divided into four main areas of competence: core technical, supporting technical, business, and behavioral competencies.

The frameworks also specify the evidence, or assessment criteria, a graduate must provide to demonstrate that he or she has in fact acquired the necessary competencies to complete the program and assume independent status.

CAMS is a competency-based program, meaning that a graduate progresses in the program by demonstrating the requisite knowledge and skills specified in the framework. There is no pre-defined, minimum time period for how long a graduate must remain in the program and graduates move at their own pace.

ADNOC intends for a CAMS graduate to learn and develop through a mix of on-the-job training, classroom instruction and off-the-job, short term assignments to other parts of the company or with suppliers for familiarization purposes. The primary means of learning is to be through the graduate performing real work assignments on the job, with supervision and coaching provided either by a front line supervisor or senior staff employee.

ADNOC sets annual performance objectives for the operating companies to achieve in their implementation of the CAMS process. These performance objectives typically focus on both the inputs and outputs of the CAMS process. ADNOC uses key performance indicators

to monitor operating company performance, which are reviewed quarterly.

CAMS Project Management

By one definition, a project is "a sequence of unique, complex and connected activities having one goal or purpose and that must be completed by a specific time, within budget, and according to specification". (Wysocki, 2007)

ADMA-OPCO leadership viewed the installation of the CAMS process within the company as a project and therefore, in 2004 established a central CAMS Project Team in the company's HR Division. Following the definition cited above, the leadership delegated to the CAMS Project Team Manager responsibility for achieving the goal of fully integrating the CAMS philosophy and process into the way ADMA-OPCO develops its entry level employees. The Project Manager was to deliver this result within a specified timeframe and budget and in such a way that the CAMS process in ADMA-OPCO, once implemented, conformed to the specifications set by ADNOC. These specifications are:

- 1. All graduates have a current PDP conforming to the minimum quality standard set by ADNOC (Matroushi, 2006).
- 2. The primary means of learning and development is through the performance of real work by the graduates under the guidance and supervision of coaches from the front line organization.
- 3. All graduates progress through the program at rates that have them complete the first phase of the program, resulting in their integration into the company, no more than 30 months from their respective start dates.
- 4. Quality assurance is achieved by meeting or exceeding the ADNOC assessment and verification minimum standard.

Measuring the progress rate of a CAMS graduate is made easy by the way CAMS is structured, which lends itself to numerical tracking. To move ahead in CAMS, a graduate must complete three assignments in Phase 1, which results in integration, and a fourth assignment in Phase 2, which results in independent status. Each assignment is sub-divided into five modules, which are each in turn made up of 5-10 competency elements. It is a simple matter to count the number of competency elements, modules, and assignments a graduate has completed and report it as a percentage of the full program scope defined by the framework.

Progress tracking and monitoring is complicated, however, by the fact that the over 100 CAMS graduates in ADMA-OPCO are widely dispersed throughout the company. In addition to the several Divisions in the head office, graduates and their coaches work in three different offshore production and processing locations (with variable work schedules); on drilling rigs, maintenance barges, and supply boats; and at shore-based warehousing and transportation terminals.

To effectively monitor and report on graduate progress throughout the organization, and to ensure that all other project deliverables were being met, the CAMS Project Team developed a robust project tracking and monitoring information system. The tracking system was modeled after the plan-do-check-and-report model, with interlinked software tools that store planning information, capture assessment data and provide timely reports on the status of every graduate in the program (Figure 1). The tracking system also provides project and graduate status reports for use by ADMA-OPCO and ADNOC management. The system was constructed using standard PC software and is thus low in development and maintenance costs and easily deployable without special training.

CAMS Tracking System

PLAN. Step one is planning. Every graduate is required to prepare an annual CAMS PDP with schedules of planned work assignments, training courses, and assessment events. The PDP includes a forecast prepared by the graduate of his or her expected progress during the year. The PDP is done in electronic form and the resulting planning information is captured by the tracking system.

DO. The tracking system then follows the actual progress and activities performed by each graduate. Assessment events, course attendance and on-the-job performance records (from quarterly performance reviews) are retained by the system. The tracking system facilitates these events by:

- Providing for automated booking of assessment events, with electronic notification of a graduate's request for assessment sent to those who need to know and automatic generation of the required assessment forms. ADMA-OPCO conducts over 1000 assessment events per year and automating this process has greatly improved program efficiency.
- Generating an annual assessment master plan, compiled from the individual PDP's. The assessment master plan is used to issue reminder notices to the graduates when a planned assessment date is approaching. It is also used by the CAMS Project Team to plan ahead in scheduling assessors and verifiers.
- Generating training course schedules and joining instructions.

Tracking is aided by a group of Technical Mentors who are members of the CAMS Project Team. The Technical Mentors closely follow their assigned graduates and guide them through the CAMS process. One of their roles is to provide an informed perspective on why or why not a graduate is progressing according to the PDP forecast.

CHECK AND REPORT. The tracking system functions like a dashboard, reporting on and controlling all aspects of the program. It anticipates planned events, generates status reports, and raises alerts when someone is falling behind his or her forecasted progress rate. The main checking and reporting features of the tracking system are:

- An alert system to ensure that all graduates have current PDP's.
- Monthly graduate progress reports.
- Performance and progress reports used by the Technical Mentors in conducting quarterly performance reviews with the graduates and their line managers (Figure 2).
- Performance and progress reports grouped by discipline, team, division and business unit for management reporting purposes, in addition to the individual graduate reports mentioned above.
- An alert system to warn when verification events are due in line with the assessment and verification policy.
- A series of reports used by CAMS Project Team in reviewing its performance with management in regard to the team's annual performance objectives and key performance indicators.
- A full history of the assessment and verification events attended by each graduate.
- An alert system that signals when a graduate has earned a grade promotion or a salary increase, which are linked to progress achieved by the graduate.

Perhaps the most valuable feature of the tracking system is its ability to raise an alert whenever a graduate is in danger of falling significantly behind schedule. These alerts help the team make timely and proactive interventions should a graduate's performance be or about to become lagging behind schedule.

Figure 3 is a process flow chart showing how these monthly reports are used by the CAMS Project Team to keep graduates from falling behind schedule. The main steps in the process are (responsible party shown in brackets):

1. Prepare and issue the Monthly Progress Report (CAMS Team) (Figure 4).

2. Conduct a Monthly Performance Analysis for all graduates (CAMS Team).

4. Notify the graduates, their coaches and their technical mentors of the need or opportunity for improvement (CAMS Team).

5. Set a realistic progress improvement goal for these graduates to achieve in the coming month (CAMS Team and Frontline Coach).

6. Work with the graduate in preparing a specific action plan to achieve this goal (Graduate, Frontline Coach and CAMS Team).

7. Execute the action plan (Graduate and Frontline Coach).

8. Follow up to ensure that the recommended action plan is being executed (CAMS Team).

9. Facilitate the required resources for executing the plan and carry out the required assessment and verifications to achieve the progress goal (Frontline Coach and CAMS Team).

10. Provide final feedback (CAMS Team) and celebrate the achievement (all involved).

Slow progress was a chronic problem in 2005, before the tracking system was operational. Once the tracking system was installed in 2006 and alerts were being generated, performance dramatically improved as shown in Figure 5. In January 2006, 35% of graduates were behind schedule and only 21% were ahead of schedule. One year later, in January 2007, and after 12 months of alerts, the percentage of graduates behind their plan fell to 0% and the percentage ahead of their plan rose to 67%. The percentage ahead of plan has fluctuated in 2007 from 48% to 65% of the graduate population but the record of those behind plan has so far this year been a perfect 0%.

Coaching Culture

The tracking system and the progress monitoring it facilitates are important tools in the implementation of CAMS. The system would be less effective, however, if it were not for the efforts made by the CAMS Project Team and ADMA-OPCO leadership to encourage a learning and development culture in the company.

Some people take a natural interest in coaching but for many others, their first love is their technical craft and their attention is primarily focused on achieving stretch operating targets. Convincing people to devote time to coaching is often a daunting task.

Recognizing this challenge, the CAMS Project Team acted to provide employees tapped to be coaches with the training they needed to understand how to be an excellent coach. A course in coaching for high performance was conducted throughout the company and at all levels of management. In addition, the CAMS Technical Mentors run workshops for coaches on various parts of the CAMS process, such as how to assist a graduate in preparing a PDP. The fact that coaching is a formal part of a person's role and not just a voluntary add-on is reflected in the coaches' annual performance contracts. And finally, great effort is placed in rewarding and recognizing those coaches who take their roles seriously and perform it to a high standard.

Graduate Motivation

It is also important for a program like CAMS to be effective to instill a strong desire for learning and development in the graduates. For some, who are eager to learn and to grow their job skills, this comes naturally. But for many others it does not. To encourage all graduates to excel, ADMA-OPCO and the CAMS Project Team worked to create a positive learning and development environment for all graduates.

Each year and following the annual ADMA-OPCO Leadership Conference, the CAMS Project Team runs a similar conference for the graduates. Called the "Future Leaders Conference", it focuses on the same themes addressed in the main Leadership Conference and also on themes relevant to the learning and development objectives if the graduates. The conference also serves as a venue for publicly recognizing graduates who are high performers.

High profile job assignments, such as extended attachments abroad to participate in major construction projects, are another form of recognition that also provide a learning benefit to the graduates.

In 2007, ADMA-OPCO leadership demonstrated their commitment to learning and development on the occasion of a major shutdown and plant turnaround. For the first time in the 45-year history of ADMA-OPCO, all production was shutdown for 16 days due to a related shutdown in a downstream gas liquification plant operated by another company. ADMA-OPCO took advantage of this shutdown to perform hundreds of small and large maintenance, de-bottlenecking, and construction projects at all operating sites. In past years, when such activities occurred, it was common for the graduates to be forced to leave the sites to make room for the expanded work crews. In 2007, the story was different. The top leaders in the company recognized that the shutdown represented a rare and perhaps never to be repeated learning opportunity for the graduates. Despite the fact that the offshore population swelled to more than four times the normal complement, the leadership ensured that accommodation space was dedicated for graduate use and that onsite coaching was provided by company resources.

The success of achieving the above objective could be clearly noted through the positive change in the young graduates attitude in taking charge of their development and the acknowledgement that they are a critical resource for the company from day one.

Conclusion

The CAMS tracking system has been an essential tool in the successful implementation of the CAMS process in ADMA-OPCO. Its many reporting features and ability to provide alerts have prompted people into taking action in effective and timely ways. The power of the graphical reports and charts it generates have done much to bring about a heightened attention paid to graduate progress and a prompt dealing with those graduates falling behind schedule.

The tracking system is a powerful tool made even more powerful by being part of a systematic culture change to a learning and development organization, driven by ADMA-OPCO leadership. The leadership recognizes the importance to the future viability of ADMA-OPCO of having a learning and development culture. This is evidenced by their willingness to devote the resources, including their own time and personal commitment, to ensuring that the company achieves this desired end result.

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FIGURE 1: CAMS TRACKING SYSTEM WAS BASED ON THE PLAN-DO-CHECK and REPORT MODEL



FIGURE 2: A TYPICAL GRADUATE'S PROGRESS RECORD DISCUSSED IN QUARTERLY PERFORMANCE REVIEWS



FIGURE 3: CAMS MONTHLY PROGRESS REVIEW FLOW CHART WITH TEAM ACCOUNTABILITIES

| | | | | | ISUUUSI | 2007 | | | |
|--|---------------------------------|--------------------|--------------------|--------------------|------------------|--------------------|--------------------|----------------------|--|
| PF Name NO. | Position | CAMS Start Date | Current Assign. | Previous Status | Actual Status | Expected Status | Actual Progress | Expected Progress | Comment |
| trical Development Engine | ar | | | | | | | | |
| 051363 Sultan Mohamed Sultan Al Reyami | Jnr. Electrical Engineer | 01-May-07 | - | | | | 21% | 40% | Veeds to Cover 1 element (s) to Avoid Fail down From As Schedule Zone to Ped Zone |
| ument & Control Engineeri | bu | | | | | | | | |
| 041031 Mohamed Habib Ali | Jnr. Control Supervisor | 01-May-07 | - | | | | 21% | 30% | Veeds to Cover 6 element (s) to Remain in Ahead Zone |
| 051332 Fadhil Abdualla Mousa Abdull | a Jnr. Control Engineer | 01-Apr-07 | - | | | | 36% | 50% | Veeds to Cover 8 element (s) to Move From As Schedule Zone To Ahead Zone |
| 051309 Salem Khalfan Mohame d Al Mansouri | Jnr. Control Engineer | 01-Feb-07 | - | | | | 57% | 70% | Veeds to Cover 7 element (s) to Move From As Schedule Zone To Ahead Zone |
| nanical Site Engineer | | | | | | | | | |
| 051127 Ahmed Abdul Osder Salem Al Hashemi | Jnr. Mechanical Supervisor | 12-Mar-06 | 2 | | | | 179% | 180% | Veeds to Cover 2 element (s) to Remain in Ahead Zone |
| ation Engineering (Oil) | | | | | | | | | |
| 051054 Mohamed Abdulla Sultan Abdulla Al Hosani | Jnr. Well Integrity Engineer | 01-Oct-07 | m | | | | 207% | 220% | Veeds to Cover 5 element (s) to Move From As Schedule Zone To Ahead Zone |
| rvoir Engineering | | | | | | | | | |
| 051057 Hamdan Mohamed Al Hamma | di Jnr. Reservoir Engineer | 15-Aug-05 | m | | | | 247% | 250% | veeds to Cover 2 element (s) to Remain in Ahead Zone |
| Engineering | | | | | | | | | |
| 051361 Mohamed Omar Saleh Al Mashijari | Unr. Drilling Supervisor | 01-May-07 | - | | | | 29% | 40% | Veeds to Cover 7 element (s) to Move From As Schedule Zone To Ahead Zone |
| 051348 Osama Hashem Saeed Hamar Al-Shekalii | Jnr. Drilling Supervisor | 01-Apr-07 | - | | | | 30% | 40% | Veeds to Cover 2 element (s) to Remain in Ahead Zone |
| 050955 Yousef Ahmed Abdulla. Mohamed Al Hammadi | Jnr. Drilling Supervisor | 01-May-05 | - | | | | 145% | 280% | Veeds to Cover 1 element (s) to Avoid Fail down From As Schedule Zone to Ped Zone |
| 051230 Ibrahim Hussain Al-Sumaiti | Jnr. Drilling Supervisor | 19-Aug-06 | -1 | | | | 113% | 130% | Veeds to Cover 9 element (s) to Move From As Schedule Zone To Ahead Zone |
| 050985 Mubarak Ibrahim Al Nakhi | Jnr. Drilling Supervisor | 26-Feb-05 | 2 | | | | 164% | 310% | Pesigned |

FIGURE 4: MONTHLY PROGRESS STATUS REPORT GENERATED BY CAMS TRACKING SYSTEM



FIGURE 5: PROGRESS IMPROVEMENT ACHIEVED IN 2006-07