

DOING THINGS BETTER WITH VALUE MANAGEMENT

by

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Synopsis

The Management of Change in an organisation is an important task challenging most industries. Not only must the need for change be recognised but the organisational culture must be adjusted to accept, and indeed welcome, change.

The Queensland Electricity Commission's adoption of the motto - Doing Things Better - together with clearly enunciated goals, has provided the pressure for reviewing how things are done. One of the tools used by the QEC to identify and evaluate ideas for improvement has been Value Engineering for design concepts and Value Management for operational and administrative processes.

The success of the "Stanwell 200" with its aim of cutting \$200 Million off the \$1 600 Million Stanwell Power Station Project led to further studies being carried out in the Operations, transmission and Administration areas. Although the actual cost savings in these studies were much lower in absolute terms, it is the benefits of improved communication, improved staff morale, individual staff development and acceptance of change which have proved the value of the Value Management Process.

1. INTRODUCTION

In 1985/86, the Queensland Electricity Commission adopted a programme called "QEC-Doing Things Better". Employees were actively encouraged to contribute in their own way to an improvement in the Commission's overall performance. A reduced rate of growth in electricity demand caused by the world economic decline, particularly in metal and commodity prices, resulted in the deferral of construction programmes and an opportunity for the Commission to review designs to see whether things could be done better.

The original approval to proceed with Stanwell Power Station provided for commissioning of the first unit in 1988. The tight programme and the selection of major plant items made it expedient that overall design should largely follow that which was chosen for Tarong Power Station. When it became clear that due to the lower level of load growth the station would not be needed until 1992 (and later 1993), time became available to critically review the design using value engineering techniques. Savings for these studies were targeted at \$200 Million from a project estimate of \$1 600 Million. The broad objectives of the Stanwell 200 project were :-

a) Minimise costs and increase value by -

- reducing total life cycle and capital costs (by at least 20% for new plant);
- maintaining plant availability and optimising system reliability;
- optimising the time to complete the project and minimising effort on site, especially during prime construction period;
- improving conservation of resources;

b) Identify life cycle savings of \$200 Million (excluding presently identified savings).

c) Foster and develop communications between the engineering disciplines, emphasising a systems approach and cost consciousness.

In the words of the then Manager Generation Design, Viv Baker, "Value engineering develops in people a level of enthusiasm and sense of purpose that lifts them to high levels of achievement - well beyond normal expectations". This was borne out by the results. In 23 studies conducted in 1986 and 1987 under the Stanwell 200 Project, potential capital savings of \$180 Million were identified and changes worth \$110 Million already have been approved for implementation. These savings do not include the capitalised savings for improved operating and maintenance costs. With these included, the potential saving well and truly exceeded the targeted \$200 Million (costed in December 1982 dollars).

Buoyed by this success with Stanwell Power Station studies, studies were initiated in the Operations and Administrative areas of the Commission. The basic techniques used in value engineering were applied in reviewing the activities of these Departments. As these studies became less engineering orientated it was decided to call all studies Value Management Studies.

2. ESSENTIALS

Experience has shown that the essential ingredients for a successful Value Management Study or programme of studies include:-

- Top Management Support
- Autonomous, Multidiscipline Teams
- Effective Line Management of Value Management Process

Top management must be fully supportive of the concept to ensure success for a number of reasons. Firstly, the process requires inputs from many, if not all, divisions within an organisation. The type of input can vary from information to fully committed personnel and must, at all times, be readily obtainable. Secondly, it is often found that major savings can be achieved by changing the concepts or philosophies set by management. Thirdly, the teams must be encouraged to attack the 'sacred cows' of the industry, as these will often prove to be the areas where change will give the greatest benefit. Fourthly, for the team to work industriously and enthusiastically they must know that their recommendations will be taken seriously.

To produce worthwhile results in the time given, autonomous multidisciplined teams are needed to ensure all areas are considered and combined efficiently. The teams should not be aligned to any department so that they will work towards savings for the organisation, not their department. To ensure that all areas are considered and combined efficiently the teams must be multidisciplined. It is of great value to have a planner, designer, installer and user on the team. To focus and control the team a goal is set (25% cost saving/value improvement), rules are set (Value Management process) and roles are allocated (Leader, Secretary, etc.). The process ensures that the goal will be reached by using the strengths of each team member.

The Value Management process is a simple, fast moving and logical process that removes complexity and produces results. It is not a 'cost-cutting' exercise but a method which looks at improving value OR saving money by doing the necessary functions in a better way. The process analyses the present situation into functions, eliminates the unnecessary, creates new ways of doing these functions, evaluates which is the best valued way of doing the functions without loss of quality and finally presents recommendations.

Value Management recommendations, like all other recommendations, require a motivated and productive line management to ensure their implementation. Only effective line management can achieve the control, interest and follow through to make these happen.

The results of this utilisation by the Commission of the Value Management process have been significant but this may be regarded only as 'easy' harvest. Continued use of the VM process in more detailed areas should produce further gains. Following a 41.5% return on one major Stanwell design concept, it was thought that a further study into a subsection of that design was wasted effort, but the team responded with an additional 9% saving.

3. STUDY PROGRAMME

Depending on the complexity of the task, the length of the workshops were varied, although the process remained the same. It soon became obvious from the results obtained in a series of studies that certain aspects of our normal ten day workshop could not be shortcut and were indeed false economies in the total scheme of things. Figure 1 shows a typical programme which the Commission has found to be so successful.

Teams are not compelled to rigidly observe such a programme as every study is different. The workshop programme must remain flexible to obtain maximum value. It has been proven that it is possible to run a five day programme, but only where team members do not need to seek external information or interview outsiders. The success of such a study does require full effort in the Strategy Meeting phases so that team members come to the workshop fully prepared and motivated to perform. On longer workshops the value of the week-end break in the middle of the workshop cannot be underestimated. Team members benefit from time away from each other to think over what has happened in the first part of the workshop. Some of the most innovative and highest value ideas have been forthcoming on the Monday of the second week. time is therefore needed in the second week to expand and build on these concepts. For this reason, larger studies shortened to seven days have tended to fall short of their full potential. The Commission now discourages the shortening of study periods purely for the saving of workshop costs.

4. COMMUNICATIONS

The multidiscipline composition of Value Management teams has presented an opportunity for improved communications between the Departments and Organisations represented.

In the process, a group of five or six individuals are thrown together and challenged to produce a result in a limited time period. Total commitment is required, which quickly breaks down the inevitable 'us and them' syndrome which exists between Departments and disciplines in any organisation. An increased strength of purpose develops between them as they develop as a team. In effect, a Value Management workshop is a proven team building exercise.

In one or two instances, team building has been one of the parallel objectives of a study. Key studies for a particular Department have been used to forge bonds between Section Heads while gaining an appreciation of one another's roles. In joint studies this team building assumes a long term importance as informal lines of communication between organisations become a trusted method of information exchange.

The common bond remains for a long time with the relationships built up during these seven to ten days proving to be more than useful communication links in the post-workshop period. The 'old boy' network has been replaced by the 'VM' network between Departments and Organisations.

Why does this happen? The emphasis early in the study is on team dynamics, the challenge of abilities and the understanding and development of roles. The workshop itself provides a non-threatening environment where the normal 'rules' of organisational behaviour have been replaced by the Value Management processes. The contributions of all individuals are recognised without the normal prejudices and biases. An understanding develops of the capabilities of other team members and much of the long term improvement in communication can be traced to this appreciation of one another's role in the organisation and a realisation of how the skills of that individual or his Department might be utilised in other circumstances. Service Departments benefit particularly by working with operational line Departments. Knowledge of and respect for one another's talents can

lead to better utilisation of an organisation's resources. The organisation is strengthened by good communications between people who understand each other. This has developed in our Commission.

5. TEAM SELECTION

Team selection is a vital ingredient of a successful Value Management Study. In January 1987, a four day workshop was conducted to review the process as it had been developed in 1986. In the area of team selection the conclusions of this workshop of Value Management Facilitators were that the combination of individual team member's expertise, role and experience were key factors in the selection of an 'ideal' team. The optimum number for a team was five and in an engineering application should include a designer, end user, technical experts and a wildcard. A 'wildcard' should be a person who would question how and why and could be taken from an area not necessarily directly involved with the study's topic, although he may have knowledge of related areas.

Eighteen months' further experience has not altered the Commission's view greatly on team composition. The basic combinations of designer, user and wildcard is its primary goal. Later in the paper, Value Management's role as a 'change-agent' will be discussed. In this role of using staff to review current operations and recommend changes which would increase value, it is particularly important to include in the team, opinion leaders from the workforce who will assist in marketing the findings of the study to those affected by the recommendations.

In non-design areas where systems or processes are being studied, teams must also include a mix of disciplines suitable to cover the total system being studied. In broader areas where all interests cannot be represented by teams of five or six members, the selection of sponsors¹ from other non-represented parties allows total coverage. This is preferable to an increase in team size.

Value Management techniques have been used to review the total functions of Gladstone Power Station to ascertain what needs to be done to improve station performance and allow extended life. Team selections here comprised a combination of local operations and maintenance staff (engineers, technicians, operators and line supervisors), equivalent staff from other power stations, designers, technical experts and occasionally a specialist from outside the Commission.

6. STAFF DEVELOPMENT

Participation in a Value Management study is an extremely valuable staff development exercise and, on occasions, Managers have deliberately included individuals for this purpose. The unique combination of events which comprise the Value Management process have benefitted all participants.

During the preliminary meeting team members are introduced to the task and the process in which they will be participating. A team building exercise is conducted and the team leader allocates information gathering tasks for the workshop. The workshop itself consists of a series of milestones by which time the team must achieve certain tasks. Hence they learn to work under pressure. It soon becomes evident that all must contribute if the task is to be completed and a worthwhile presentation made to management. Functional analysis, lateral thinking, decision analysis, negotiation, questioning techniques and marketing of ideas all come into play during the workshop. The task is tackled in a

¹ A sponsor is a Senior Manager, whose responsibilities encompass the area of the particular study and who will be closely involved in decisions regarding the implementation of the team's recommendations. He assists in determining the scope of the study, and before and during the study, guides the direction of the team's work and acts as a sounding board for their ideas.

syndicate type approach which is successfully utilised by many management schools. It is the individual's knowledge and experience which is utilised in the process. Team members invariably come away with an ownership of the recommendations and, provided prompt management feedback on acceptance or rejection of recommendations is received, a motivated and valuable employee is the result.

Team members also come away from a study with a higher awareness of value and cost, an ability to use a systems approach to problem solving, an ability to break systems down to their basic functions, and a more positive attitude to change and the questioning of previous practices. The importance of putting effort into presentation when putting forward ideas or recommendations in order to gain acceptance is a principle strongly reinforced by the Value Management experience.

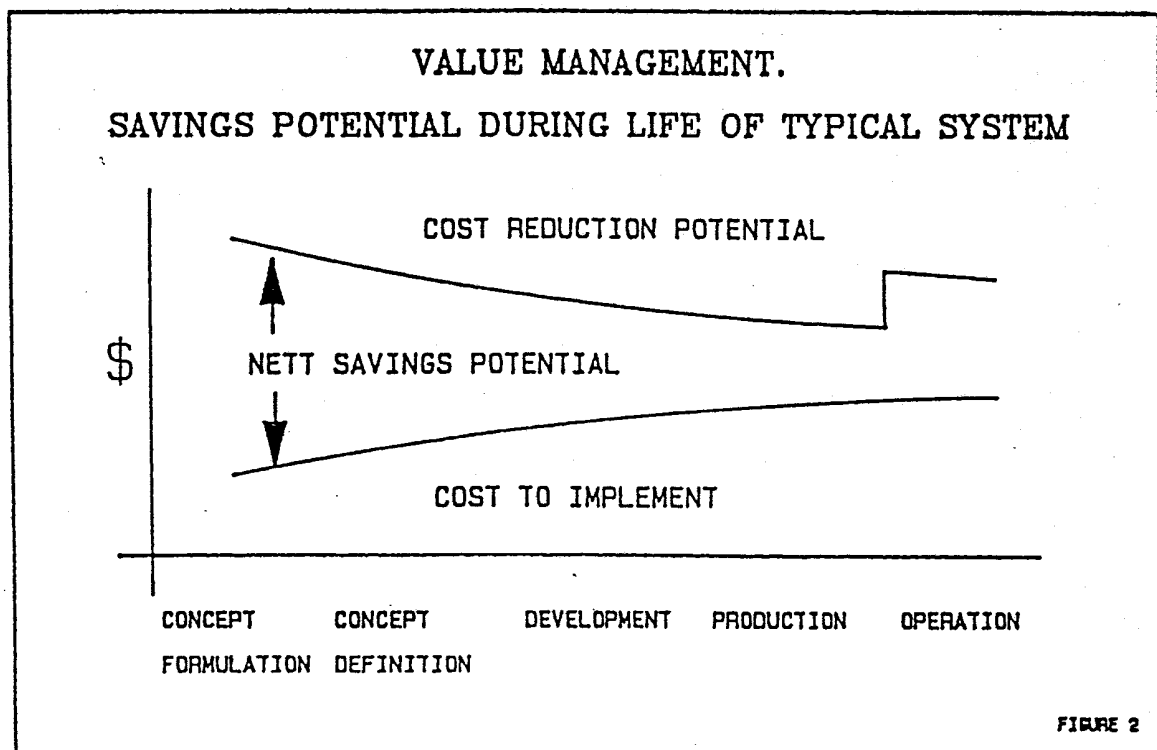
7. JOINT STUDIES

"The reality is that millions - literally an unlimited number of innovation/improvement opportunities lie within any factory, distribution centre, store or operations centre. And you can multiply that by more millions when you can involve the factory and distribution centre and store working together as a team. And multiply again when you add the involvement in innovation by suppliers and customers."

'Thriving on Chaos' - Tom Peters

Without doubt the highest returns, especially in the area of savings potential occur in the concept formulation phase of the life of a typical system.

Figure 2 illustrates that the cost of implementation of change increases through concept definition, development, production and operations phases, thus reducing net savings potential. Hence the Commission's value management analysis of design concepts for Stanwell Power Station, although constrained by having some major contracts already assigned, were the areas where greatest returns could be achieved.



However, significant returns have been and are still being achieved in reviewing procedures and systems. These analyses have shown that worthwhile returns have come from questioning the internal influences or constraints which have often determined how the function being examined is carried out. Many of these returns have the added advantage of being able to be immediately achieved, where design concept returns take longer to achieve.

This is equally true of the external influences which affect a process. The Commission's experience with joint studies has shown that often these external influences can be easily diluted or even eliminated completely, resulting in improved value for both parties. The tackling of these interfaces with other organisations could represent the greatest potential for improved value for an organisation.

Joint studies completed so far have involved:-

- the Queensland Water Resources Commission where a better understanding of each others' requirements led to a significant breakthrough in cost reduction for both parties;
- Callide Coalfields where, by temporarily removing the commercial boundary, the team identified a significant amount of duplication of effort and need for better communications;
- Various Electricity Boards, where Value Management was used to smooth the integration of activities with the Commission; and
- Queensland Railways, where the unloading of trains at Gladstone and Stanwell Power Stations was examined by the multi-organisational team to ensure procedures did not disadvantage the Commission, the Railways or the Mines. Savings were identified for all organisations but day to day communications were once again the big winner.

The Queensland Water Resources Commission has successfully included farmers and other users in studies of local water systems.

The customer-driven direction adopted for marketing of power also possesses enormous potential for gains by using this technique to analyse and supply major customer requirements. The rapport and understanding built up in such a study would ensure an optimum solution by considering all aspects.

8. VEHICLE OF CHANGE

In the electricity supply industry, change is becoming the norm rather than the exception. Gone are the days of having an essential commodity with steady growth rates. Competition from other energy sources and tendencies towards energy conservation in the current economic climate demand that the industry maintain a competitive edge. Marketing initiatives are being adopted by all utilities to convince consumers to use more power.

In such a dynamic environment it is essential to continually review the way things are being done. Everything needs to be questioned - How can we better utilise our installed plant? How can we reduce the cost of our future installations? How can we better provide for customer needs?

An essential ingredient of any successful sales or marketing campaign is that the product itself gives good value. Value is the cornerstone of the Value Management process. As stated earlier, it does not necessarily mean cost reduction but maximum value for every dollar spent.

By definition, change means disruption. This is particularly true of operational and administrative studies where the team investigates systems already in place. For change to occur, routines or

procedures become subject to review and workers in that area are placed in a stressful situation. What better way to implement change than through the involvement of individuals likely to be affected.

In the Gladstone studies, not only has Value Management assisted in completing a massive analysis task in approximately four months, it has also provided a 'shot in the arm' for local morale due to the participative approach taken.

Local staff were able to contribute actively in the formulation of the recommendations. The various levels of staff achieved a sense of cohesion never previously attained and the complete analysis made them aware that management decision making is often complex and very seldom is anything black or white. Finally they had to stand up and be counted as their team made a presentation of their findings to their fellow workers and management. The open nature of these presentations generated healthy discussion and often other ideas for improving value.

Shortly after approval was given for implementation of the recommendations of the study teams, consulting engineers, Burmot Australia Pty Ltd were commissioned to assess the condition of Gladstone Power Station. Included in their report was the following statement:-

"The general condition of the Gladstone Power Station is good. The current program of plant improvements appears to be well directed and there is already evidence that plant availability will be substantially improved in the short to medium term as a result of this work. The involvement of the station operating and maintenance staff in the investigations and studies carried out to justify the plant improvement work appears to have been most beneficial and the morale and application of station staff are well above average in Australian utility experience."

It is also important to realise that the purpose of Value Management Studies is to develop ideas and inject new thinking into possible innovative ways in which functions might be undertaken. As the findings are just one input into planning, design or management thinking and are then subjected to rigorous appraisal before acceptance by Management, the presentation to relevant staff provides a preview of possible actions. Where change is involved, this open forum approach allows people time to digest and comment on recommendations prior to a decision on implementation being made. In this way the natural negative reaction to imposed change can be avoided and positive ideas sold to those likely to be affected. It is in these situations that it is important to include an opinion leader amongst the team members to assist in marketing the ideas and their acceptance in the workplace.

As all changes in value include an assessed risk, this causes fears and doubts in the minds of those responsible for implementation. In accepting change the organisational culture must include the pressure for change, a clearly shared vision of the result, a capacity to accept change and an achievable plan to prevent haphazard efforts and false starts. If any of these links are missing the change will falter and may fail to achieve the desired results.

Change disturbs the established culture of an organisation. In the Commission, corporate critical success factors have been identified and goals clearly enunciated. Managers within the organisation have then been challenged to produce critical success factors for each level of their Departments but the methodology for achieving this has been left to them.

Value Management has been used in several areas to assist in defining what the basic contributions of Departments are to those corporate goals. It has been further used to identify areas where opportunities exist for doing things better by challenging existing procedures and designs or by challenging supposed constraints.

Management must provide the pressure for the need to change. Value Management can produce the vision of the result and the means to achieve the result. However Management is responsible for planning the implementation of the change.

9. CONCLUSION

For the Queensland Electricity Commission Value Management Studies have proved valuable inputs to planning, design and management thinking. They have developed new ideas and injected new thinking into possible innovative ways of doing things better. However, indications are that the use of this process will reap longer term rewards for the organisation in the areas of improved communications, staff morale, staff development and acceptance of change.

10. REFERENCES

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