

**INCENTIVE CONTRACTING IN DEFENCE
NEW OPPORTUNITIES FOR THE VM SPECIALIST**

by

Lieutenant Colonel R.J.Dace QGM RAAOC

Synopsis

LTCOL Dace will describe the background to the Department of Defence Value Management Incentive Program and how it will apply to all Defence contracts.

Good morning gentlemen, my brief this morning is to tell you about the new Defence Value Management Incentive Program. Let me start by introducing myself:

I am LTCOL Roger DACE, and I am the Director of Value Management. As you can see I am an Army officer, however my appointment is a triservice one and I am equally responsible to all three Services.

The VM Directorate fits within the Defence structure. The Department of Defence is broadly divided into two components, the three Services under the command of the Chief of the Defence force and three distinct management areas under the overall direction of the Department Secretary. Value Management falls within the civilian part of Defence, within the Acquisition and Logistics Organisation, although we can be tasked by the Services. The A&L Organisation is responsible for all procurement activity undertaken by Defence: for new capital equipment, for all logistic procurement, for the construction of new facilities as well as the maintenance of existing property, and for repair and maintenance programs. In short, if any order is placed or any contract let then it is administered through the A & L Organisation. DVM is placed centrally within this Organisation, and we provide a 'consultancy' type of service to all Defence customers, and to a lesser extent to defence contractors.

The role of the Value Management Directorate is to support the Department of Defence in getting best value for the defence dollar through the introduction of Value Management contractual incentives. Best value may be interpreted in this context as either buying more for the same amount of money, or buying the quantity originally contracted for and paying less.

Before I tell you how these new contractual incentives will work, and to convince you that the Defence Value Management Incentive Program is not a bureaucratic sleight-of-hand trick, it is appropriate that I explain what we mean by Value Management and briefly outline its history. The term Value Management is a relatively new one (and I will explain the name change later), however for those of you who are professional engineers the term is synonymous with the earlier terms Value Analysis and Value Engineering.

In essence the program is one which we have developed from an American Department of Defense program, modified to reflect our unique needs and to incorporate the benefits of hindsight from the US program.

There are many techniques which are used in VM and I do not intend to confuse the issue by going into those here, but in very basic terms it is a process which can be applied to any concept, design, or manufacturing process, as well as to administrative processes, and which seeks answers to the following questions:

- * What is it?
- * What does it do?
- * Is it really necessary?
- * What does it cost?
- * What else will do the job?
- * What does that cost?
- * Is this new idea practical?

* What is the probability of acceptance?

You could say, with some justification, that those are only the common sense questions that we ask of ourselves everyday yet in a very real sense there is nothing so uncommon as common sense. In Defence we have to accept the fact, painful as it may be, that we are seldom the source of the most up to date information and technology, we don't have those resources, but in the private sector expertise is relatively concentrated within fairly well defined boundaries.

For example, while I could expect high quality advice from Army's Engineering Development Establishment on general automotive matters, both you and I would be surprised if a higher level of specific expertise was not available within the Ford Motor Company. Indeed, if high levels of specific expertise did not exist within industry those companies working in those areas would very soon be out of business.

The set of techniques that we are talking about today are certainly not new, and I would like to briefly outline the history of Value Management.

In an informal way the history of VM can be first traced back to World War 2, in the United States. As the effects of the war became increasingly felt in industry, materials which had been commonplace before the war began to be in short supply. As a consequence, defence industries in particular were forced to look for alternative materials. It was this search which, for example, led to the development of synthetic rubber. Much to the surprise of industry, many of these alternatives were not only found to satisfy use requirements they were found to be cheaper. After the war much of industry returned to prewar materials and processes, but a number of companies found that in doing so they faced increasing difficulties from competitors not bound by the same traditional attitudes.

One of those companies which found its post war market share declining rapidly was the General Electric Company. Both before and after the war GE had employed a man called Lawrence Miles as a buyer: he reasoned that if the war time process of being forced to look for alternative solutions had worked as well as it had, then during peace time when access to alternatives was so much greater the perhaps GE should develop an 'alternatives' strategy.

It was Miles therefore who developed the basic principles of Value Management which still hold good today, where the emphasis is placed on identifying ESSENTIAL FUNCTIONS and LOWEST COST ALTERNATIVES. That the techniques worked was soon demonstrated as GE returned to profitability. The techniques which Miles developed he called Value Analysis.

In the mid 50's the US military began to recruit business experts from the private sector in order to improve their overall efficiency. Among those recruited were Value Analysts, but as they were to be held on Service establishments against Engineering appointments the term Value Engineering came into vogue. The use of VE techniques spread gradually through the American Services, and in 1964 a consolidated Defense program came into being. In 1987 the program was strengthened and revitalized, and became so patently successful that in 1988 the US Office of Budget Management issued an instruction which required all US Federal Agencies to include Value Engineering incentive clauses in their contracts.

The Australian experience has a number of similarities which can be traced back to the second world war. We had the Government Austerity Campaign which did such things as doing away with double breasted jackets, cuffs on mens trousers and pleats on womens' dresses. All of which were seen to be nonessential during wartime when cloth was in short supply.

In the sixties and early seventies we flirted with the techniques, but because at that time we were experiencing a commodity boom there was not the pressure for either the private sector or defence to place the same emphasis of cost effectiveness as there is today. The Department of Defence did however maintain an interest, and in 1983 the first Australian text book on the subject was released by Defence.

It was in 1984 that interest in Defence underwent a resurgence. At that time I worked in Army Material Branch, and it became apparent that based on the forward financial estimates Army would very soon not be able to afford a whole range of items that were considered to be strategically essential. As a result of that assessment I undertook a study to examine where high costs were falling and why, and subsequently propose a solution.

It soon became clear that high costs were in the main attributable to two sources:

- an inability by the customer to clearly differentiate between those requirements which were **NEEDED** and those which were **WANTED**; and
- an almost obsessive concern with **SPECIFICATION** rather than **FUNCTION**.

In looking for an approach which would tackle these two areas, the US Value Engineering program appeared to offer a way ahead. In order to test the validity of the US program in the Australian defence environment we decided to test the techniques against a number of ammunition projects. Ammunition was selected as it was seen to be an area of 'black art', where we were all too often presumed to not have basic design data, and where user safety was of paramount concern. I will come to specific examples in a moment, but let me say now that the lowest cost of manufacture reduction that we achieved was 46%, with the highest being 93%. And not only were significant cost savings achieved, but in every case there was no reduction of functional ability.

This retention of function very closely mirrored US defense experience.

Let me now talk about two of those examples that I referred to earlier.

The first of these is the humble smoke grenade. In 1984 we were manufacturing the British designed No 83 Colored Smoke Grenade: it was not particularly effective, and was costing us \$45 each. We told the factory that as the smoke grenade was not strategically significant, and we could buy an imported smoke grenade for around \$25, we intended to not place any further orders in country.

Not surprisingly the response from the factory was less than enthusiastic! 'Hang on' they said, 'the reason it costs that much is because of what you, the user, require it to do: much of which apparently you do not require our competitor to do'. 'What do you mean' we said. 'Well, for a start, you require us to give you a smoke grenade with a five year shelf life whereas our competitors product only has a two-to-three year shelf life. To give you five years we make a grenade with a three year shelf life, then we pack each individual grenade in an hermetically sealed metal can'.

Now from our perspective the five year shelf life might seem not unreasonable (if we are to apply the same requirement to other manufacturers) until you establish that we have always turned over all our smoke grenade stocks every two years!

So we were paying for an attribute which was of absolutely no benefit to us. 'OK' we said, 'we'll do away with the outer can, but you're still too expensive'. The factory, St Marys, then explained to us that was at least in part our fault because the customer were not only asking for a colored smoke

grenade, but we were insisting on it being made with specified materials in a specific manner. As an example, the body of the grenade was specified in accordance with a 1950's British design to be made in tin plate. This was only available through one manufacturer, in Adelaide, and each can cost \$20. Applying the techniques of Value Management, that is examining the FUNCTION of that item, it was apparent that the body served two functions, it:

- * contained the smoke composition, and
- * mounted the initiation system.

Once the functions had been defined it was then possible to look for alternative containers. The obvious ones are beer cans and soft drink cans: the soft drink can eventually being selected as it is steel rather than aluminium. This container is not only stronger than the old tinplate can, it only costs 20 cents. A number of similar exercises were carried out on other components of the grenade, all of which resulted in a grenade now costing just over \$20. Not only is the grenade cheaper, but because of the other changes which were introduced it is more reliable.

Having demonstrated to Materiel Branch - Army that the application of VM techniques could save us money without any loss of performance, in this case a saving of around \$400 000 a year, we were tasked to apply the techniques to a more significant item; the 81mm HE mortar bomb.

In 1986 we were making a US designed bomb: each one cost \$465, it had a maximum range of 4 600 metres, the accuracy and lethality were poor, and its reliability in wet weather left a lot to be desired. I am not saying that it was inherently a bad design but it was a product of the early 50's. And even had it been any good, our manufacturing licence from the States would not have allowed us to make them for export.

By the application of VM techniques, the Engineering Development Establishment in conjunction with the ammunition factory at St Marys, have developed a new all Australian designed mortar bomb. The accuracy and lethality have been improved, it is not affected by the rain, it has a range in excess of 6 000 metres, and will cost in mass production around \$200. What we now have, is a bomb which will outperform any of its overseas competitors, is cheaper than any of its competitors, and has major export potential. This bomb is now undergoing its final Ordnance Council trials, and should be in service next year.

In 1988 a working party was set up jointly by the Capital Procurement Organisation and the Defence Logistic Organisation to review the results which had been achieved in Materiel Branch, and to advise on whether VM techniques might have broad applicability in Defence. That working party examined a wide range of VM applications, in military environments overseas as well as civilian use both overseas and in Australia, and concluded that it had a significant cost saving potential for the ADF. Subsequently it was agreed that a small team would be established to develop a formal VM program for Defence, and run a two year trial program. This program was launched by the Minister for Defence, Senator Robert Ray, on the 2 July 1990.

As Figure 1 shows, VM can be applied at any stage during the life of a project: from concept stage right through to eventual disposal. The earlier the techniques are applied the greater the saving, although until a contract is actually let you are really talking about cost avoidance rather than savings.

For the purpose of the Value Management Incentive Program we will principally be working in the postcontract area, although we will be providing advice within defence to help ensure that new

equipment requirements are written in FUNCTIONAL terms. Let me now turn to the detail of the VM Incentive Program.

I mentioned earlier that in Defence we do not have the resources to be experts in all of those areas in which carry out procurement, yet until now if a contractor tried to save us money there was a every chance that he would be financially disadvantaged. Let me give you a simple example.

Let us assume that Army wishes to place an order for a 1 000 pairs of socks, and to do so we go through the normal public tender process. During that process we would have specified the socks to death; we would have given the grade of wool required, the colour, probably even the number of warps and wefts per square inch. At the end of the process we have a contractor providing the socks at \$10 a pair. Let us assume that he operates on a 20% profit margin, so that for this contract the return on his investment will be \$2 000.

Let us now assume that the successful contractor is an innovative manufacturer, and having been awarded the contract he suddenly becomes aware of a synthetic alternative to wool which he could make the socks in without any loss of functional properties, but which would allow him to sell the socks for \$5 a pair.

He now faces two dilemmas; the first is who does he discuss his idea with within defence and how long will it take for a decision to be made, but assuming he finds someone who agrees that he has a good idea which should be implemented he then faces the more serious problem.

We will be delighted to amend the contract to accept the new synthetic material if we are satisfied that it will meet the users functional requirements because that will save us \$5 000: but the contractor would find that the return on his investment has now fallen to \$1 000 from the original \$2 000, so we should hardly be surprised that in these circumstances there is no incentive for any contractor to come forward with a good idea which will reduce the overall value of the contract.

You may be thinking, 'What a pity that the contractor did not have the idea for the alternative material earlier, he could then have responded to the Request for Tender (RFT) with that alternative.' Unfortunately, the contractor could easily be disadvantaged by disclosing his initiative before he has a contract. Under the current system, if the Defence Contracting Office receives an offer to supply an alternative it is quite at liberty to recommend to the project or supply office that the original RFT be cancelled, and a new RFT be issued calling for quotations using the alternative. And of course, there is no guarantee that the tenderer who had the good idea will get the subsequent business.

Now let us look at how this contract, and this contractors initiative will be treated under the Value Management Incentive Program.

The first thing that would occur if we accept the contractors Value Management Change Proposal would be for the contract to be amended to allow acceptance of the new material.

This would release a GROSS saving of \$5 000 (as before). Under the VMIP we allow the contractor to recover, as a charge against the gross saving, those costs which are directly attributable to the development and submission of the contractors proposal. In this case we would recognise that the contractor may have had to carry out tests or trials to convince Army of the merits of the new material, the contractor might even have to modify some machinery to implement the change, and he will certainly have incurred some administrative costs in putting the proposal forward. For the purpose of this example we have assumed \$1 000 in recoverable costs leaving a net saving of \$4 000.

Under the VMIP this net saving is shared between the contractor and Defence, and in most cases the sharing basis will be 50% to each.

From the contractor's perspective he has \$1 000 'conventional' profit plus the \$2 000 VMIP incentive payment a return on his investment of \$3 000 as compared with the previous \$2 000. And not only that, but because we have covered any implementation costs, the contractor should find himself in a stronger position for subsequent sock business hopefully outside of his Defence customers.

The other significant change which the program introduces deals with the 50% of the net saving which comes back to defence.

Under the existing arrangements, if a contract came in under budget then any saving would be returned to the Defence Central kitty. Under this new program, what will happen in essence is that the Service or Division which 'owns' the contract which achieves the saving will be able to reapply that saving in a manner which best meets the approved requirements of that service or Division.

Participation in the VMIP is voluntary from the contractor's perspective, and in most cases he will be eligible for 50% of the net saving. Participation by Defence is not voluntary; if a contractor wishes to offer us a potential cost reduction we are bound to at least give it reasonable consideration.

I mentioned earlier that one of the difficulties which contractors face when dealing with the public sector is how long it may take us to reach even the simplest decision and of course time is money, even for the public sector. To respond to this concern, when a contractor submits a Value Management Change Proposal we, Defence, undertake to provide a response within 45 calendar days.

Within those 45 days we only have three options available to us:

- * The first option is to accept the contractors proposed change, authorise a contract amendment, and when and only when the change is implemented authorise the incentive payment on the basis of achieved savings.
- * The second option, and one which the customer will always have, is to reject the change proposal. If that option is exercised then we must give the contractor a reason why his proposal fails to meet our functional requirement. It will not be acceptable to reject a proposal on the grounds that it is not to a technical specification. We must look behind the technical specification to identify the function which the 'customer' requires.

Do we need to justify our rejection of a VMCP? Experience shows that there is often a communication gap between contractor and consumer, and if that gap can be bridged then the contractor may be able to rework his proposal into a form which will make it acceptable. And after all, it is in our interest to receive practical proposals which will save us money.

- * The final option that we have is, in essence, to say that we like the sound of the idea but we can not reach a decision to either accept or reject at this time. We may need additional information from the contractor, we may wish to carry out our own independent tests or trials: but whatever the reason for the delay, we must give the contractor both an explanation and an indication of a date by which a decision should be possible.

In developing the Defence program we held extensive discussions within Defence, and with Defence industry. We also asked the American Defense Department if, with the benefit of hindsight, they would vary their current program. As a result of those discussions we not only arrived at those elements of

the program that I have already discussed, but we have introduced the following additional incentive opportunities.

I believe that within Defence we have the potential if not the resources to identify major areas where savings can be achieved. There will therefore be encouragement offered for members of the Department and the ADF to initiate VMCPs. When that occurs we will require the contract to be amended to implement the change. In this circumstance, which will result in an overall reduction in the value of the contract and consequently a reduction on the contractor's return on investment we will, firstly, meet any implementation costs which arise from the contractual change, and secondly, we will preserve the dollar profit of the original contract.

In some of the procurement areas, and particularly in the area of clothing and footwear, there is no single Australian manufacturer who can meet all of our annual requirements. In this circumstance we may issue a number of identical contracts concurrently. Let us assume that one of those contractors comes up with an idea that we wish to implement. We deal with that contract on the basis of sharing net savings 50/50.

We now 'own' an idea which if applied to those other identical contracts could offer us further savings. Under the VMIP we can take that good idea and require it to be applied to those other concurrent contracts. If we exercise that option and that decision is up to the project or procurement officer then we will, meet any implementation cost which arise from the change, and preserve the dollar profit on the original contract.

Having met those charges for those other contracts that may well leave a residual net saving. In that circumstance we share those savings with the originator of the idea. But in this case, because we will have done most of the work with those other contractors, the savings are shared on the basis of 75% coming back to the Defence area which 'owns' the contract and 25% going to the originator of the idea.

The third additional incentive opportunity relates to the issue I raised earlier about a Defence tenderer being reluctant to disclose alternative solutions to Defence functional requirements before he holds a contract. If a contractor has responded to an RFT but has not been awarded the contract, then there is a possibility that we may never get access to a potential money saving idea which that tenderer had. Under this part of the program an unsuccessful tenderer may submit a VMCP. If he does, and we accept the proposal, then we may exercise an option to require the successful contractor to implement the VMCP.

Again if we exercise that option we will meet the implementation costs and preserve the original dollar profit. In this circumstance any net savings will be shared on the basis of 50% coming back to the Defence area owning the contract, and 50% going to the contractor who had the idea but who did not get the contract.

Let me now turn to changes in the way in which we will deal with PROPRIETARY RIGHTS in the VMIP. Under our current system, when the Commonwealth entered into a contract which the contractor was able to exploit to achieve additional sales then we sought to derive some financial return through licence fees or royalty payments. The net amount of money which came back to Defence was usually small, but it had the potential effect of delaying the entry of the manufacturer into the market, and quite frequently the additional costs resulted in a smaller potential market.

Under the VMIP we seek to remove from Defence industry any disincentive to breaking into larger markets, and consequently we will deal with Defence contractors as follows:

"If a VMCP is accepted, the contractor grants to the Commonwealth the rights to its use by the Commonwealth. This shall not prejudice the protection of rights held by the contractor through patents or the use of proprietary items. The contractor will be given the non-exclusive right to use the accepted VMCP on a royalty free basis for commercial exploitation."

Which is based upon the Swedish Government model. Under this system, providing that we can use the idea without paying ongoing royalties or licence fees, then we wish to encourage the contractor to exploit his initiative and we will not seek to recover for Defence any direct financial return. Of course, if the contractor is as successful as we would hope the tax man will still take his share. So while Defence may suffer some small financial penalty with this change the Commonwealth as a whole will benefit as will the contractor.

The Defence Value Management Incentive Program is not a new idea: last year the US program made a significant contribution to the overall funding of Defense.

Their Value Engineering program effectively gave them an additional funding of \$2.4b. To achieve that their program cost some \$122m: a return of 20:1. The Americans will be increasing their 'investment' this year. In that program they employ 246 people full time. During 1988/89 they received nearly 12 000 Value Engineering Change Proposals, of which nearly 7 500 were accepted. Of those initially not accepted they expect that a large proportion will eventually be accepted after reworking with Defense input.

For our program, for the initial two year trial we have a staff of four Service officers, three civilian officers to be trained as value analysts, and two administrative officers. Our annual budget of around \$800 000 covers our salaries and overheads, the hire of office space in Canberra, all travel and subsistence, telephone and postage charges etc: to justify our existence we must show a return of around 20:1 on that or to put it another way, we must help Defence achieve VMCP savings of at least \$16m.

I have no doubt that is achievable.

Let me conclude by referring to something which Winston Churchill is reputed to have said,

"You can count on the Americans to do it right...."

but he went on to add,

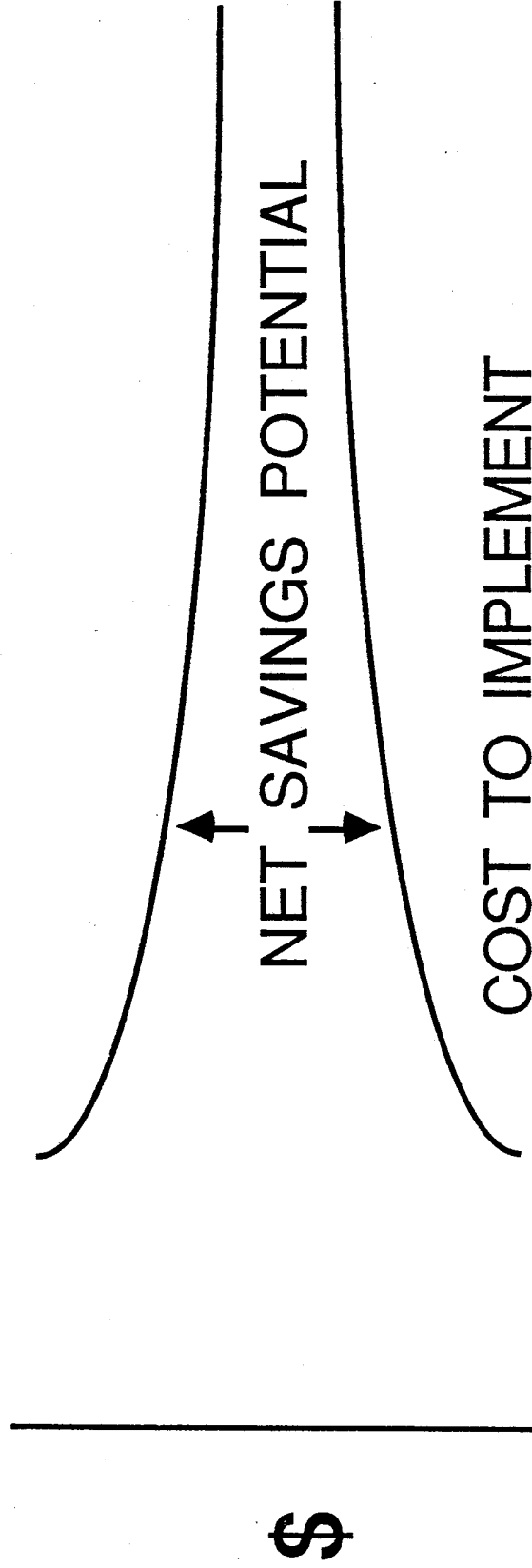
"....but only after they have tried everything else."

and that is certainly true as far as Value Management is concerned. The Americans have now had a successful program in place for over 30 years: it works, and we will make it work.

VM SAVINGS POTENTIAL DURING THE LIFE OF A TYPICAL SYSTEM

10

COST REDUCTION POTENTIAL



CONCEPT EXPLORATION	DEMONSTRATION AND VALIDATION	FULL SCALE DEVELOPMENT	PRODUCTION/ DEVELOPMENT
------------------------	---------------------------------	---------------------------	----------------------------

*A&L 6.07