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STEP LIST FOR REASONABLE PRICE  
(New Application Of Value Engineering)

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## I. INTRODUCTION

Many a debate has so far been held regarding introduction of Value Engineering (VE) methods into business. The contents of debate are: in order to obtain support & understanding of entrepreneur, VE must be acquired thru experience, a great deal of persuasion in adopting the proposal of VE must also be well taken into account, etc.

Lawrence D. Miles has once stated in his book (See remarks 1) his point of view with respect to "minimizing the risk of personal loss" as follows; in the chapter "understanding the decision environment" it says "the system to originally produce something better in value can be made up into giving out its full effect in less than a year. However, it may well be considered that it takes several years to change the idea of decision-makers who try to put effectively into action the results obtained thru study & debate for producing originally something better in value ." (See remarks 2) Thus he grasps the aspect of what is going on in general enterprises and explain the reasons and their measures as follows:

In deciding willingness to incorporate into existing product the improved proposals for a cut in price, it is important as a first step "to take every measure possible to minimize fear of embarrassment or personal loss which comes, or may come, to those in the decision area supporting changes," since these fears are always apt to cause opposition to change.

From this point of view, when considering measures to prevent persons involved at each step from fear of embarrassment or personal loss due to unexpected drop of cost price, we have come up with the basic "Steplist for Reasonable Price." Reviewing this list we have found that it could be used not only as a measure to prevent fear of embarrassment or personal loss but also as a steplist for various types of cases, we have compiled it by extending it as far as managing the cycle of new products/ mass-production.

Note: I would like to make sure that what is described in this briefing and steplist is not expressed from our firm's point of view but merely from an individual point of view, because even if it is possible to put this kind of idea into practice, it can be utilized only when such practice has been made a term of a business deal.

## II. VIEWPOINT OF PREVENTING FEAR OF EMBARRASSMENT OR PERSONAL LOSS

The preparation of a so-called steplist for reasonable price has been made according to the circumstances as follows:

It so happened that the price of a certain product had been reduced to about one tenth its original price by simply reviewing the price. At that time one of the purchase section personnel related to this matter came to ask for advice if there is any proper way of explaining the reason, because if this fact

were revealed to outsiders, the person involved would not only be criticized for his usual way of handling business but also this fact would threaten the person involved as well as his superiors with serious responsibility. Therefore, this review as to the drop in price would not be given light unless people involved were prevented from fear of embarrassment or personal loss. So after giving a lot of thought about it we have as a starting point of conception the fact that hindsight is much better than foresight.

In the above case the cost price was previously ten times more due to the fact that the volume of information pertaining to this product was lacking in the beginning. However, the price had been lowered due to the fact that the product had become much stabilized, and also many factors had been confirmed which makes it easy to review the price.

In order to explain this matter theoretically, we considered that classification of some kind of time-series review should be established. We thought it possible to prevent fear of embarrassment or personal loss by proving the series of usual and new aspects. This way of thinking is acceptable for the people who can comprehend that there should be the attitude so-called "review" and also there may be a result not expected previously at the stage of review, if the factors which were unknown at the previous stage should ever decrease in number.

Therefore, even if there was a discontinuous cost reduction, there should be no reason for idle resistance to change.

### III. THE WAY OF THINKING TOWARDS REASONABLE PRICE.

As to the purchasing price, it is socially accepted that the following are considered to be the way it generally should be:

1) In case an enterprise purchases something, no purchase action can be taken unless its price is fixed.

2) The price is a "knot" of cooperation which materializes the product between purchaser and supplier.

3) The price so determined must be reasonable.

4) Reasonable price should as a rule be appropriate to both purchaser & supplier for carrying out a mutual transaction and should generally consist of cooperation and adjustment made within limited time.

5) Establishing of reasonable price should agree with basic rules of public morals and business transactions. When it is found that no matter what kind of general review, adjustment, or measure is taken, agreement cannot be reached, the production of the project involved should be replaced by something else or should be discussed to bring it to discontinuance. The above mutual relations will be shown on the first chart.

### IV. THE WAY OF THINKING WITH RESPECT TO STEPLIST FOR REASONABLE PRICE.

Thru the general way of taking a look at the steplist for

reasonable price as mentioned in the previous paragraph, one finds it natural that the level of judgment varies when each stage ranging from the stage of plotting the product to the end of its production is viewed from the standpoint of system engineering. It turns out to be as follows if it is divided in the viewpoints the same as the jobplan of VE.

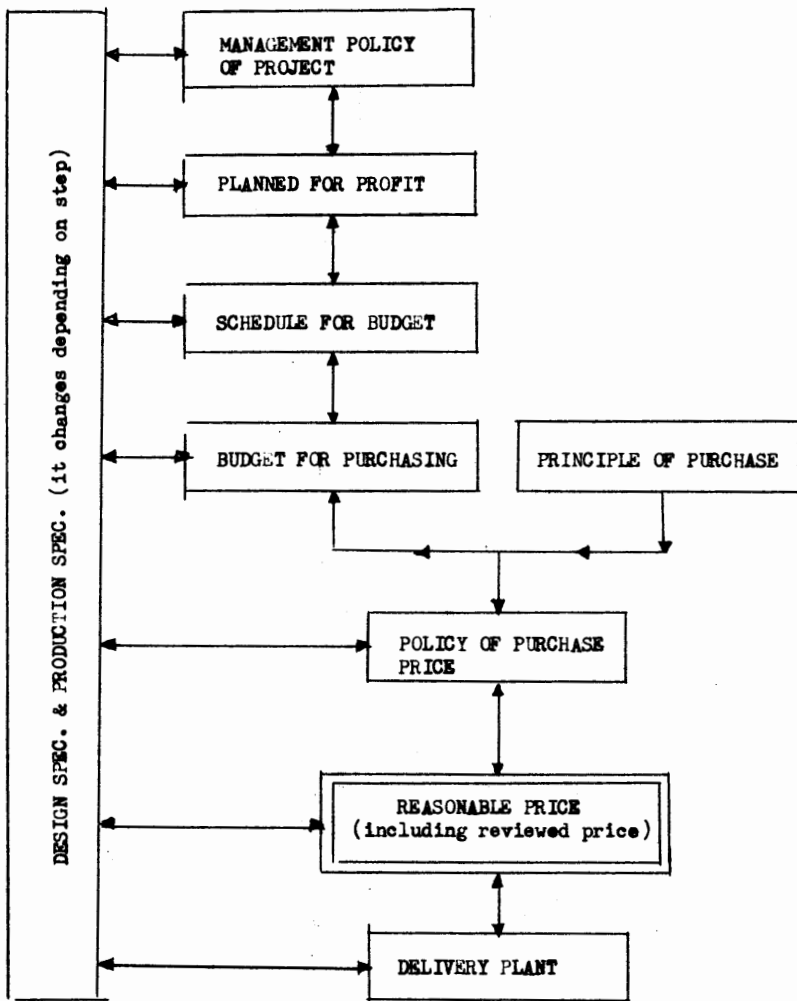
- 1) The stage in comparison of plots.
- 2) The stage in organization.
- 3) The stage in practice.
- 4) The stage in fixation.
- 5) The stage in correction.

subdividing the above stages into steps, dividing the contents into input & output, and arranging them so as to move into the next input after the output in the previous step has been approved, is the "steplist for reasonable price" shown in the 2nd chart. Though this list is started from the stage where the plot for new product is compared, it is also arranged in a way that can be used for any stage by adding, deleting and correcting the contents of each particular step item.

Meanwhile, if viewed from a different side, this can be used for the adjustment of terms of premise to examine the 1st & 2nd look of VE.

Before starting examination of VE including design change, it is needless to say that the object in question should have a reasonable price, or the term for review, and should be consulted and confirmed.

POSITIONING OF REASONABLE PRICE



Note I.  $\text{-----}\rightarrow$  means one-way  $\leftarrow\text{-----}$  means possibility of mutual adjustment.

Note II. Policy of purchasing prices consists of the following elements.

1. Sorts of Price

- (1) From the view-point of cost price: Consistency, expenses, accounting, distinction, cost price, actual expenses & estimate price.
- (2) From the view-point of contract: Compromise, agreement, negotiation, contract, large demand, provisional rough estimate, adequacy, solidity, custom, precedence, billing, proposal, JASIF, development, corrected price.
- (3) From the view-point of free market: Freedom, market, fixed price, precedence, contract, acquired matter, domestic, international, uniformity, competition, supply, price of demand, wholesale price, official quotation, custom & maximum price.
- (4) From the standpoint of control: Control, official rate, distinction, uniformity, accounting, compensation of expenses, price set up by JASIF.
- (5) From the standpoint of monopoly: Monopoly, inborn, onesided, price something like natural law.
- (6) From the standpoint of encouragement of protection: Official rate, control, negotiation, contract, encouragement, compensation of cost price, distinction, duplication, precedence, existing price.
- (7) From the standpoint of calculating skill: Rough estimate, schedule, budget, precedence, cost accounting, solidity, bareness, rate of diminution, standard cost & basic price.

2. Example of background rule to be mainly picked up.

- (1) The rule of maintaining degree of operation.
- (2) The rule of adequacy.
- (3) The rule of proper timing.
- (4) The rule of sharing burden of proportional expenses.
- (5) The rule of traditional system.
- (6) The rule of techniques.
- (7) The rule of solvency.
- (8) The rule of substitution.
- (9) The rule of maintaining position in market.

3. A type of development of purchasing price.

- (1) A type of active price: there are price-plotting & initiative type.
- (2) A type of passive price.

STEP LIST FOR REASONABLE PRICE

Note: 1. Approval by manager or chief of section is required before any output step in each step is to be utilized for next input step.  
 2. In case no solution available at each step, it is possible to return to the previous step.

STEP	CONTENTS OF STEP	INPUT		OUTPUT		CRITERIAL OF PRICE	
		ITEM	PRE-INSURANCE ACTIVITY	ITEM	POST-INSURANCE ACTIVITY		
THE STAGE WHERE TO COMPARE PLANS	I Definition of Basic Requirements.	<ul style="list-style-type: none"> <li>Selection of item subject to purchase or of system (Eng.)</li> </ul>	<ul style="list-style-type: none"> <li>To decide person who takes care of settling company's internal matters &amp; person related to the matters.</li> </ul>	<ul style="list-style-type: none"> <li>Spec of our company (draft) (Eng.)</li> <li>Spec. of estimate term. (Prod.) (Material)</li> </ul>	<ul style="list-style-type: none"> <li>To check contents of spec. according to check-list.</li> <li>To check in accordance with check-list of estimate term spec.</li> </ul>	-----	
	II Selection of applicable vendor for a estimate (qualitative)	<ul style="list-style-type: none"> <li>Listing of applicable vendor etc.</li> <li>Specifications of our company (draft)</li> <li>Specifications of estimate term (I)</li> </ul>	<ul style="list-style-type: none"> <li>To advertize for applicable vendor (domestic &amp; foreign)</li> <li>To review vendor's yearbook</li> </ul>	<ul style="list-style-type: none"> <li>Maker's spec.(draft)</li> <li>Maker's estimate(II)</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation of maker's design/production facility.</li> <li>Evaluation of maker's financial ability.</li> </ul>	-----	<ul style="list-style-type: none"> <li>Evaluation of ability is to be made according to post &amp; present accomplishment of business.</li> </ul>
	III Evaluation of fulfilment for price & engineering requirements.(quantitative)	<ul style="list-style-type: none"> <li>Maker's specifications (draft)</li> <li>An estimate of maker (II)</li> <li>Budget/target price</li> <li>Data for similar item</li> <li>(spec. &amp; price)</li> </ul>	<ul style="list-style-type: none"> <li>To review spec. (To cut off excessive spec.</li> <li>Distribution of budget.</li> <li>To examine possibility of practice.</li> <li>To obtain previous approval from government agency regarding development.</li> </ul>	<ul style="list-style-type: none"> <li>Joint spec. of both our company &amp; maker.</li> <li>Maker's re-estimate (III) (list of what price consisted)</li> <li>Executing plan.</li> <li>Preliminary test plan(as required)</li> <li>List to compare selected makers</li> </ul>	<ul style="list-style-type: none"> <li>Degree of technical &amp; financial accomplishment for requirements.</li> <li>To check if the product duplicate with the one already in market.</li> <li>To compare with master schedule &amp; see if it is made up with time enough to spare.</li> <li>To clarify critical pass.</li> </ul>	Similar price Budget price Functional price.	List of what price is consisted.
THE STAGE OF ORGANIZATION	IV Selection of Vendor	<ul style="list-style-type: none"> <li>Joint spec. of both our company &amp; maker.</li> <li>Maker's reestimate (III)</li> <li>Actual plan (draft)</li> <li>Plan for preliminary test (as required)</li> <li>A chart to compare selection of makers.</li> </ul>	<ul style="list-style-type: none"> <li>Examination of content of functional test and inspection of initial product:Q/T, FAI.</li> <li>To examine patents.</li> </ul>	<ul style="list-style-type: none"> <li>To determine vendor</li> <li>Final spec.</li> <li>General plan.</li> <li>Final plan.(IV) (according to business deal)</li> <li>Additional list of what price is consisted. (IV)</li> </ul>	<ul style="list-style-type: none"> <li>To check adequacy(major schedule &amp; quality insurance.</li> <li>Partial check-up on what price is consisted. (technic of sampling, analogue, weight etc.)</li> </ul>	-----	Co-efficiency of insurance regarding per-rate of profit up to delivery of Lost 1 & other risks.
	V Materialization of placing order & carrying out plan:	<ul style="list-style-type: none"> <li>General plan</li> <li>Final estimate</li> </ul>	<ul style="list-style-type: none"> <li>Final negotiation prior to contract. (delivery term, price etc.)</li> <li>Examination of estimate cost.</li> </ul>	<ul style="list-style-type: none"> <li>To place order</li> <li>Actual schedule up to delivery of first lot (including functional test &amp; inspection for initial product: Q/T, FAI)</li> </ul>	<ul style="list-style-type: none"> <li>Delivery of contract.</li> <li>To check minor schedule(to clarify critical pass)</li> <li>To make periodic report for schedule &amp; determine &amp; instruct who take responsibility against each controversial point</li> </ul>	Similar price Budget Price Arranged price Price of cost analysis	To clarify the division responsible & person in charge to whom follow-up be made.
	Stage in practice up to	<ul style="list-style-type: none"> <li>Submission of manufacturing schedule &amp;</li> </ul>	<ul style="list-style-type: none"> <li>To obligate maker for preparing data of cost</li> </ul>	<ul style="list-style-type: none"> <li>To enter standard man-hor onto manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>To check according to check list.</li> </ul>		<ul style="list-style-type: none"> <li>To determine previously between our company and vendor the man</li> </ul>



THE STAGE TO PUT THINGS INTO PRACTICE	VI		<ul style="list-style-type: none"> <li>facturing schedule &amp; engineering design.</li> <li>Quantitative extraction of controversial points regarding rate of profit.</li> <li>To grasp actual man-hour.</li> </ul>	<ul style="list-style-type: none"> <li>To determine percentage of successive definition for processing manhour by dividing into SET &amp; RUN.</li> </ul>	<ul style="list-style-type: none"> <li>To design measure improving rate of profit and to determine the actual schedule.</li> <li>To pick out progress of work in question by comparing with standard manhour and practice measure for it.</li> </ul>	<ul style="list-style-type: none"> <li>To decide which price system be taken by agreement or lotsize. (See remarks)</li> </ul>		<ul style="list-style-type: none"> <li>To take corrective action for material &amp; part by actual measurement and actual purchasing price.</li> <li>To clarify as to processing cost by the difference of value between actual accomplishment and the one retroactively by standard number.</li> <li>The method of lot size price is the one that decide the price depending on the lot size ordered in proportion to fixed &amp; fluctuating price.</li> </ul>
THE STAGE WHEN THINGS BECOME STABILIZED	VII	<p>Stage where stabilization begins after lot 2 - 3.</p> <p>Re-evaluation for appropriate price.</p>	<ul style="list-style-type: none"> <li>Schedule to put into practice the draft for improvement of rate of profit.</li> <li>Extraction of controversial points in case of usage.</li> <li>Spec. of estimate term. (VII)</li> <li>List of what price is consisted. (VI)</li> <li>Date to review establishment of price &amp; delivery term. (especially the division of fixed &amp; fluctuating expenses)</li> </ul>	<ul style="list-style-type: none"> <li>Technical survey.</li> <li>Calculation of standard manhour.</li> <li>To detect the difference in technicality by comparing standard manhour between two makers.</li> </ul>	<ul style="list-style-type: none"> <li>To make periodic report of the result executed for promotion of rate of profit.</li> <li>To establish &amp; practice the measure regarding the controversial points in usage.</li> <li>Approval by our company of the list of what price is consisted, and reestablishment of unit price as required.</li> <li>To determine necessity and policy of design change.</li> <li>Establishment of time to make annual review.</li> </ul>	<ul style="list-style-type: none"> <li>Utilization of specialist.</li> <li>Refer to standard of quality.</li> <li>To check according to check list.</li> <li>Equalization of net profit.</li> </ul>		<p>(To check according to cost analysis price)</p> <p>(Especially the rate of processing fee)</p>
THE STAGE TO REVIEW	VIII	<p>Annual review &amp; stage of V.A.</p>	<ul style="list-style-type: none"> <li>Submission of items to review.</li> <li>Submission of items to examine V.A.</li> <li>To indicate policy &amp; examination of design change.</li> </ul>	<ul style="list-style-type: none"> <li>To settle the contents of V.A. contract.</li> <li>To settle the contract of design change, as the case may be.</li> </ul>	<ul style="list-style-type: none"> <li>To determine putting items into practice as the result of review.</li> <li>Execution &amp; summarization of V.A. activity</li> <li>Enforcement of design change.</li> </ul>	<p>To review and consult the reaction to price due to design change.</p>	<p>Method of cost</p> <p>Diminutive rate.</p> <p>Processing wage rate.</p> <p>Standard price of material.</p>	<p>Related matters to be discussed.</p> <p>Standard of V.A. contract. (draft)</p> <p>1st year: to pay vendor 50% of amount of money after the amount saved by V.A. has been subtracted by the expenses spend to V.A.</p> <p>2nd year: to pay him 40%</p> <p>3rd year: " 30%</p> <p>4th year: " 20%</p> <p>5th year: " 10%</p>

However, it seems much better if the fee for VE be talked over after the result has come up, for it is natural that the fee varies according to the degree of contribution and utilization for the result.

#### V. CONCLUSION

As mentioned above I have described the matter pivoting on the process of how the "steplist for reasonable price" has been made. Since this steplist is made by keeping some particular product in mind, it seems necessary for each enterprise to correct it in many respects to make it easy for use. I would feel very happy if this steplist would be of any help in the application to the violently changing industrial world under the circumstance of administration.

If there is any opportunity I would like to summarize the method of comparing similar items shown in the steplist, the contents to be included in the specification of estimate term and the way the list of what price consisted should be.

- Remarks:
1. "Techniques of Value Analysis and Engineering" by Lawrence D. Miles.
  2. The article quoted here is the English retranslation from the book translated in Japanese, since this original English book is not available.