TWO WEEKS' PROGRAM FOR MANUFACTURERA GENERAL ELECTRIC,
MEXICO CITY, MEXICO..........................May 25 - June 8, 1962
L. D. Miles

(Arrived Friday noon-approx. and examined facilities and plans for Monday
morning opening.)

Not much over an hour at a time.
Half of it they take part in.

Sole purpose.... compete - improve earnings
Eliminate or prevent cost
No quality change

Research

<table>
<thead>
<tr>
<th>VALUE</th>
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</thead>
<tbody>
<tr>
<td>-----------</td>
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</tbody>
</table>
| (1) Eng. knowledge & skill | (2) Eng. practices
| | Prod. Eng.
| | Ind. Eng.
| | Mfg. Eng.
| | Good Buying
| | Cost Reduction
| | Work Simplification
| (3) Something else
| VALUE ANALYSIS

App. cost lost in any...
   concept - design e. - Mfg. e. - mfg. - purch.

What is it?

What is appr. cost
   Do a little better than competitors

We can do it

How do we do it?

Some examples that resulted.
Each answer simple
Not require new materials - processes
Did require new thinking

How to produce the new thinking

Customer wants

Functions do - please, use - esteem

Refrigerator control cover - wire - box - tube - contacts - springs
Cost buy function
Third cost - cover - springs
Make sense box - contacts

Function ident. divide classify evaluate
Esteem - pointer
TV switch

Compare
Stud
Nut
Bronze Blade
TV Support - Strapping
Turbine Plug

Believe only credible

Anatomy
Use many examples
100 - 100 - 100 - 200 - 400 - 100 (all 3)
Eng. in 800 of 1000

Six reasons why
Habits
Attitudes
Honest Wrong Beliefs
-----------------(noon)------------------
Lack info.
Lack idea

Cement
Brake band
141 - 39 and Kirksite
-----------------------------
16 - 7-1/2, Refrig., Handles
300 - .40 switch blade Filter .46 - .80
Rope
Questions for 1-1/4 hours  
list first - then their questions

1½ check  
Requisition for free stuff

Purchasing buy function handles, pipe plug, nut bar, 16...7-1/2

Fix it - perf. - costs - sales

Rules

Design for cost - fill performance gaps

Eng. 80% - p.100, m.100, e.100, ep.400, em.200, emp.100

Warm blood

Necessity of creativity

---------------------(day end)------------------------

SECOND DAY...8:30 a.m.

Montgomery Ward example

VA on blackboard - mfg. engrg., etc. learn more
  Approach
  Basic steps
  Job plan
  Techniques
    1 - 2 - 3 - etc.

Take nothing for granted
  Water wheel
  Particle analysis
Eval. 200 gals
   Multiple function

Design logic

Chapter 6 - personal loss

Implementation
   Hard decisions
   Abandon 50 - 602 motor

No extremes
Must want to work
--------------------------(finish...10:30)--------------------------

Comments:
   For teams of 24 and 46 management to top

1/2 day - excellent

Second 1/2 day - good

Third 1/2 day - too much for the management situation

Believe best
   2 half-days for men and management
   Then later meeting with top management alone.

\underline{DAY 2} started work at 11 - on projects.
   Cleared room and got seven tables.
   Established teams of 3 or 4 men -- 7 teams
      OK
   Divided work into 7 functional areas
      2 products
   Some discussion among and with men
      one group 15 min.
      one group 30 min.
         OK
From mfg. mgr. got estimate of variable overhead to use within the limited range of study 200% and 320%

Fine consideration and estimate

Looked at entire cost M-L-OH-Eng. -etc.

Men make up list of material showing costs to be included, each for their function area M L V or O

OK

Question of cost - partial - variable OH

was hard to understand

almost none of us understood it well enough

men were very interested to get the "feel" of it.

------------------------------------------ (day end) ------------------------------------------

DAY 3

Discussed tech. - costs -

Got discussion into Spanish -

Then men talk and talked - understanding grew fast.

Decided to list fixed OH separate to facilitate figuring.

Founded needed to get table $

Assign table $ to remove

<table>
<thead>
<tr>
<th>Table</th>
<th>$ Now</th>
<th>$ Removed</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>-----</td>
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<td>2</td>
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<tr>
<td>3</td>
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</tr>
<tr>
<td>etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$1000</td>
<td>?</td>
</tr>
</tbody>
</table>

Step 1

How many $ now product cost mat'l-labor-OH

Step 2

From marketing - what selling price expect prox. 2 years in future? and what cost M-L-OH need for good profit?

Step 3

Determine "cost now" for the functional areas covered by each table?
VALUE ANALYSIS - PROCON

PROJECT: "Princesa" Washer

PRESENT COST:

<table>
<thead>
<tr>
<th>Material</th>
<th>681.25</th>
<th>893.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>20.00</td>
<td></td>
</tr>
<tr>
<td>IME</td>
<td>192.00</td>
<td></td>
</tr>
<tr>
<td>Development</td>
<td>27.75</td>
<td></td>
</tr>
<tr>
<td>Tooling</td>
<td>30.00</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>951.00</strong></td>
<td></td>
</tr>
</tbody>
</table>

COST REDUCTION NEEDED: 35% approximately.

PROJECT DIVISION

<table>
<thead>
<tr>
<th>Team No.</th>
<th>Main Parts</th>
<th>FUNCTION</th>
<th>Mat'l Cost</th>
<th>Labor</th>
<th>IME</th>
<th>Total</th>
<th>Amt to Remove</th>
<th>TEAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cabinets / Tub</td>
<td>Provide Enclosure</td>
<td>98.96</td>
<td>3.82</td>
<td>31.9</td>
<td>134.68</td>
<td>65.00</td>
<td>R. Fernandez</td>
</tr>
<tr>
<td></td>
<td>Tub Packing</td>
<td>Appearance Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F. Diaz S.</td>
</tr>
<tr>
<td>2</td>
<td>Transmission /</td>
<td>Provide Motion</td>
<td>168.82</td>
<td>0.74</td>
<td>7.14</td>
<td>176.70</td>
<td>75.00</td>
<td>A. Cosia</td>
</tr>
<tr>
<td></td>
<td>Activator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pump Motor / Controls</td>
<td>Remove Water Control Power</td>
<td>292.21</td>
<td>2.38</td>
<td>22.89</td>
<td>317.48</td>
<td>130.00</td>
<td>A. de la Pena</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>M. Zuniga R.</td>
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<td></td>
<td></td>
<td></td>
<td>J. Salazar L.</td>
</tr>
<tr>
<td>4</td>
<td>Wringer Head</td>
<td>Wring Clothes</td>
<td>126.41</td>
<td>3.38</td>
<td>32.46</td>
<td>162.25</td>
<td>50.00</td>
<td>R. Zurita</td>
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<td></td>
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<td></td>
<td>A. Velazquez</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>S. Alvarado</td>
</tr>
<tr>
<td>Gen. Assy.</td>
<td>9.68</td>
<td>97.61</td>
<td>107.29</td>
<td>686.40</td>
<td>20.00</td>
<td>192.00</td>
<td>898.40</td>
<td>320.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9.68</td>
<td>97.61</td>
<td>107.29</td>
<td>686.40</td>
<td>20.00</td>
<td>192.00</td>
<td>898.40</td>
<td>320.00</td>
</tr>
</tbody>
</table>

Project Manager - R. Coria B.

Step 4
Subtracting the required cost from the present, determine the amount of reduction required in total.

Step 5
On a basis of best judgment, determine where it must come from and assign to each table the figure which is the amount of reduction expected of it.
Step 6
Each table assign its necessary reduction by function, sub-function, etc.

Step 7
Prepare list of men - tables - projects - costs and necessary costs to remove.

--- (day end) ---

DAY 4
To Men
Now you have the job -
   Your job to find an approach.
Keep simple thinking
Transformer
Illustrations
Refrig. back
Brush holder
Must learn creative thinking for more ideas.

Tendency to study parts

Urge group parts into functions and think and deal with functions.

Some functions do not evaluate readily.

Tell
Complete set of tools
Use the tools which fit
Get their $'s assigned
How they do it is up to them

--- (noon) ---

Do what works
4:30 - 5:00 today 70 people
One key problem each from some tables.
Table 1 - with 134 pesos and the necessity to remove 65, must face the fact that they cannot use the present type of enclosure and provide a different one. You can help two ways...
(1) give them suggestions.
(2) make sure that the problems of implementation of our plans are solved promptly and their plans put into production.
Table 3 - with 130 pesos to remove from 317 has the power source. It is clear that this power source cannot be used. All of its elements which add cost are not required and a better answer must be found as a power source to operate a washing machine.
Table 4 - with the wringer, has 50 pesos to remove from 162. Of this 162, 10 pesos is for each shaft, then 28 pesos go to the vendor to apply each roll. 76 pesos for the two. In order to remove 50 pesos from the wringer, something substantial must be done with this.

Table 7 - which has the task of removing 50% from the cost of accessories on the transformer also has the porcelain insulator. The porcelain insulators account for half of the total pesos studied at that table; therefore, one thing is sure...a better answer must be found to the securing of porcelain. This porcelain contains a relatively small exposed external top part which is relatively simple to make and inexpensive to buy but it is very costly because it has the long sleeve which extends inside of the tank. In porcelain making, such long sleeves warp, crack, and cause a great amount of expensive manufacture and loss. Perhaps the insulator should come in two parts--the insulator proper and a sleeve which is cemented on. This would involve no new technology since all large porcelain insulators are made in parts and cemented together. Perhaps there is some other solution but, at any rate, it must be solved.

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DAY 5 - 2:00 p.m. each secretary report creativity pages 25 and 62.
Brainstorm fasten wires together

Went to some tables to drop or push them into a bold approach or two - porcelain. Told them secretaries make report 2 p.m. Friday.

Called C. Watt stuff from Canada (after talking with materials manager)

Table 5 - round cooling tubes and rolling - Pittsfield
Had meeting of secretaries of tables to prepare them for 2:00 meeting.
Some very good stuff is starting to be heard around.

2:00 p.m. meeting 7 tables - 1 hour.
Very good meetings. On washer, it already appears requirements will be met.

In Spanish

Highlights of what have done...and...what expect to do.

Reductions which seem to make good sense now in view.
BLACKBOARD

<table>
<thead>
<tr>
<th>Table</th>
<th>Cost TOTAL</th>
<th>Cost To REMOVE</th>
<th>QUITE SURE</th>
<th>PROBABLE</th>
<th>STARTED Much More To Be Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>7</td>
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</tbody>
</table>

Report basically in two parts

1 - in words and ideas so each can see what others thoughts, approaches and plans are and how some are working out.

2 - figures on blackboard against budget.

VALUE ANALYSIS - PROCON - PRODIN

FIRST WEEK REVIEW

<table>
<thead>
<tr>
<th>Table</th>
<th>Total Cost</th>
<th>Cost to Remove</th>
<th>Quite Sure</th>
<th>Probable</th>
<th>Started much to do.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>152.</td>
<td>65</td>
<td>55</td>
<td>72</td>
<td>Empaque Apariencia</td>
</tr>
<tr>
<td>2</td>
<td>176.</td>
<td>75</td>
<td>22</td>
<td>42</td>
<td>50% Mecanismo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>Solenoides</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>81</td>
<td>Terminado</td>
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<tr>
<td>3</td>
<td>317</td>
<td>130</td>
<td>97</td>
<td>126.25</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>162</td>
<td>50</td>
<td>55</td>
<td>35% of Cost</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>11,000</td>
<td>3,300</td>
<td>636.90</td>
<td>736.90</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>918.00</td>
<td></td>
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<tr>
<td>6</td>
<td>29,500</td>
<td>2,950</td>
<td>508.</td>
<td>531.00</td>
<td>2,640.00</td>
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<tr>
<td></td>
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<td></td>
<td>288.00</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>11,550</td>
<td>5,775</td>
<td>777</td>
<td>6,224.</td>
<td></td>
</tr>
</tbody>
</table>
Warren asked what organization shall we continue. 
de Leon asked ditto 

Told them both I would later advise them. 

Took tables 5 and 6 into conference room - silicon steel vendor was there. 
Take function approach - 500,000 decisions - 25 years - update - 
What do now because of past and present machines, people, space 
factors, processing - mat'l specs - mat'l processing - market needs, etc. 
etc. 
Results of the way it grew gasoline - Canada - US - Mexico 
Now no stds - no ASA only function - what is way to do it? 
Later others $ - ASA - customer, etc. 
Started arrangements Senor Garnica to Canada 

Saw manager 
Men (managers) must think differently 
Motivation - imagination and knowledge 
Implementation 
Engr. Mgr. 
Marketing Strategy 

DAY 7 

Asked product planning to 
Review inventory on hand 
Get info - hom many of each part 
Decide what items it is practical to reduce in cost and when 
Get safeguards against ordering more present parts 
Provide schedule showing how many $ to be removed and when 
Recognizing the status of inventories 
Will make schedule - 
(See next two pages) 
Meeting excellent - many good questions - who will make 
decisions - How integrate
### VALUE ANALYSIS - COMPACT WASHER PROJECT

#### SOME FACTS IN ORDER TO SCHEDULE IMPROVEMENTS AND FINDINGS:

<table>
<thead>
<tr>
<th></th>
<th>JUNE</th>
<th>JULY</th>
<th>AUG.</th>
<th>SEPT.</th>
<th>OCT.</th>
<th>NOV.</th>
<th>DEC.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Stock Finished product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,400.00</td>
<td></td>
</tr>
<tr>
<td>Remaining Production Programmed in 1962</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,044.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Parts in stock or already ordered)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,444.00</td>
</tr>
<tr>
<td>Estimated sales</td>
<td></td>
<td></td>
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<tr>
<td>Estimated stock finished product as per Dec. 31, 1962</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,747.00</td>
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<tr>
<td><strong>CONCLUSION</strong>: No improvement can be scheduled for this year.</td>
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</table>

### NECESSARY COST PRODUCTION FOR MARKETING AT DIFFERENT PERIODS:

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>951.00</td>
<td>(1) 827.00</td>
<td>(2) 794.00</td>
<td>(2) 760.00</td>
<td>(2) 727.00</td>
<td>(2) 694.00</td>
<td>(2) 660.00</td>
</tr>
<tr>
<td></td>
<td>(less 13%=$124.)</td>
<td>(less 16.5%=$157.)</td>
<td>(less 20%=$191.)</td>
<td>(less 23.5%=$224)</td>
<td>(less 27%=$257)</td>
<td>(less 30.5%=$291.00)</td>
</tr>
<tr>
<td>(1) In order to have an average gross profit of 30%.</td>
<td></td>
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</tr>
<tr>
<td>(2) Estimations were made based on an average cost increase in washers in the period 1958-1960 of 7% yearly, and assuming no increases in list prices to keep a competitive position.</td>
<td></td>
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</tr>
</tbody>
</table>

J. Salazar Leytte
New Product Development.
<table>
<thead>
<tr>
<th>Table</th>
<th>Table</th>
<th>Table</th>
<th>Table</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>4</td>
</tr>
</tbody>
</table>

Sept. 1962 157
(175) to allow for unexpected problems.

April 1, 1963 34

It was decided that the coordinator, the chief engineer and the product planner either meet with the 4 secretaries and fill this in - or that they go from table to table doing so.

(an excellent plan)

Sept. 1963 33

Then the coordinator will - after the items have been selected - review the lead period and make any adjustments which are in order.

April 1964 33

The product planner advised that the competitor's machine was so very different that many changes which would ordinarily be deferred may as well be made as soon as practicable.

Sept. 1964 34
Went to Monterrey
Washer tables 1 - 2 - 3 - 4 set up schedule per page 12.

Product planning tended to cause changes to be made which did not change appearance. Chief engineer was on table 1 - he had become very interested and is most helpful.

Group went to work to work out details on items in plan for January 1963 implementation.

Transformer group tables 5 - 6 - 7 meanwhile had established their plan.

Worked a little occasionally with some of the tables.

Told table 7 they had to lick the porcelain problem.

Told deLeon require minimum of two men in full-time VA available to all product lines - might report to him or other - good engr. & either good mat'ls man or mfg. engr.

Planned meeting to show managers result on Friday at 3:00 - to get both GM's changed it to 11:00.

Invited president - 2 GM's then for each dept., Eng. Mgr. (Kaplan gone - Coria acting), Mfg. Mgrs., Finance or Cost Mgrs. - QC - Mat'ls - Mfg. Eng. Mgrs. - Subsection engrg. mgrs. Should have had Mktg. Mgrs too but they were downtown and we didn't think of them in time.

At 11:00, coordinator Coria led one group... coordinator Garnica the other. The secretary of each table made reports. Were very good.
Washer group with approval of chief engineer believe 157 will be out by 1/1/63. They used 175 to provide leeway.

Transformer Group

Tables 5 and 6 had some for sure - more pending.
Table 7 - accessories - were quite sure of more than 50%.
Garnica said 17% for sure out already.

Transformer mktg. man or finance man among visitors was most enthusiastic - said this made that job already profitable and would allow them to meet some bad competition.
Meeting back to LDM
Said little - called on managers for comments. Nearly all were very good comments.

Men finished reports.
  Worked out a few more items.
  Told them they could go back to offices if they had this in shape.

Men were very enthusiastic.

Met with Warren and Longren - 1 hour discussion on how to continue.
They were very interested - accepted guidance.
  Recommend (same as to deLeon)
  Coria and his group a natural
  Get good VA training for them.
Recommended in engrg. as experience showed 80% decisions effected - nearer the start of process, etc.

Work with product teams for a while, until critical cost need eliminated.
Coria knows what's still to be done on washer and can guide it.

Met with Benny - deLeon - Bill - Longren (also Warren) for another hour - same type of recommendations - excepting...

Since mfg. mgr. was making a plea for VE in his org. I played it cautiously - indicated engrg. location had some advantages.

Garnica guide remaining transformer work.
Man scheduled to be 1 week Canada, 1 week Pittsfield.
Have told deLeon expect to invite him to US - or send man down to teach him about Value Control.

FRIDAY, JUNE 8 - Tequila party and dinner.
  All team, all management and section managers
  Very good spirit.