D.u. singer hospital products corp.

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has done sufficient new product development at the research and development level to estimate a high likelihood of technical success for a product of assured commercial success: A long-term antiseptic. Management has instructed Singer’s Antiseptic Division to make a market entry at the earliest possible time: they have requested a complete plan up to the startup of production. Marketing and other plans following startup of production are to be prepared separately after this plan has been completed. Project responsibility is assigned to the division’s Research and Development Group: Mike Richards, the project scientist who developed the product, is assigned responsibiliy for project management.

Assistance will be required from other parts of the company: Packaging Task Force, R & D Group: Corporate Engineering: Corporate Purchasing: Hospital Products Manufacturing Group: Packaged Products Manufacturing Group. Mike was concerned about the scope of the project. He knew from his own experience that a final formula had yet to be developed, although such development was really a “ routine” function. The remaining questions had to do with color, odor, and consistency additives rather than any performance-related modification.

Fortunately, the major regulatory issues had been resolved and he believed that submission of regulatory issues had been resolved and he believed that submission of regulatory documentation would be followed by rapid approval as they already had a letter of approval contingent on final documentation. But there were also issues in packaging that had to be resolved:

development of the packaging design was one of his primary concerns at this time. Ultimately, there will have to be manufacturing procedures in accordance with corporate policies and standards: capital equipment selection and procurement, installation of this equipment and startup. Mike was concerned about defining the project unambiguously. To that end, he obtained and interview with S.

L. Mander, the group vice-president. When he asked Mander where his responsibility should end, the executive turned the question back to him. Mike had been prepared for this and said hat he would like to regard his part for the project as done when the production process could be turned over to manufacturing. They agreed that according to Singer practice, this would be when the manufacturing operation could produce a 95 percent yield of product (fully packaged) at a level of 80 percent of the full production goal of 10 million liters per year. “ But I want you to remember,” said Mander, “ that you must meet all current FDA, EPA, OSHA regulations and you must be in compliance with our internal specification—the one I’ve got is dated September and is RD78/965.

And you know that manufacturing now—quite rightly, I feel—insists on full written manufacturing procedures. ” After this discussion, Mike felt that he had enough information about this aspect to start to pin down what had to be done to achieve these results. His first step in this effort was to meet with P. H.

Docent, the director of research. “ You are naive if you think that you can just start right in finalizing the formula,” said Docent. “ You must first

develop a product rationale (a). * This is a formally defined process according to company policy.

Marketing expects inputs at this stage, manufacturing expects their voice to be heard, and you will have to have approvals from every unit that is involved; all of this reviewed by the Executive Committee. You have no trouble if you do your homework, but expect a good eight weeks to get this done. ” “ That certainly stretches things out,” said Mike. “ I expected to take 12 weeks to develop the ingredient formula (b) and you know that I can’t start to establish product specifications (c) until the formula is complete. That’s another three weeks.

” Yes, but while you are working on the product specifications you can get going on the regulatory documentation (d). Full internal specifications are not required for that work, but you can’t start those documents until the formula is complete. ” “ Yes, and I find it hard to believe that we can push through both preparation of documents and getting approval in three weeks, but Environmental swears it can be done. ” “ Oh, it can be done in this case because of the preparatory work. Of course, I won’t say that this estimate of three weeks is as certain as our other time estimates.

All we need is a change of staff at the Agency and we are in trouble. But once we have both the specifications and the approval, you can immediately start on developing the production processing system (g). ” “ Yes and how I wish we could get a led on that, but the designers say that there is too much uncertainty and they won’t move until they have both specifications and regulatory documentation and approval. They are offering pretty fast

response; six weeks from start to finish for the processing system. ” They are a good crew, Mike. And of course, you know that you don’t have to delay on starting the packaging system segment of this project.

You can start developing the packaging concept (e) just as soon as the product rationale has been developed. If my experience is any judge, it will take a full eight weeks; you’ll have to work to keep the process from running forever. ” “ But as soon as that is finished we can start on the design of the package and its materials (f) which usually takes about six weeks. Once that is done we can start developing the packaging system (h) which shouldn’t take longer that eight weeks,” concluded Mike. At this point he realized that although Docent would have general knowledge, he needed to talk directly to the Director of Manufactering. “ This first step, which follows the completion of the development of processing and packaging systems,” said the Director of Manufacturing, “ is to do a complete study of the facilities requirements (I).

You won’t be able to get that done in less than four weeks. And that must precede the preparation of the capital equipment list (j) which should take about three-quarters as long. Of course, as soon as the development of both the process system and packaging system are completed, you could start on preparing the written manufacturing procedures (q). ” “ But,” said Mike, “ Can I really finish the procedures before I have installed and constructed the facilities (p)? ” “ No, quite right.

What you can do is get the first phase done, but the last three of the ten weeks it will take to do that will have to wait for the installation and

construction. “ Then this means that I really have two phases for the writing, that which can be completed without the installation and construction (q’). ” “ True. Now you realize that the last thing you have to do is to run the equipment in a pilot test (r) which will show that you have reached a satisfactory level? ” “ Yes. Since that must include debugging, I’ve estimated a six-week period as adequate.

” The director of manufacturing assented. Mike continued, “ What I’m not sure of is whether we can run all the installation tasks in parallel. ” You can let the purchase orders and carry out the procurement of process equipment (k), packaging equipment (l), and facilities (m) as soon as the capital equipment list is complete. The installation of each of these types of equipment and facilities can start as soon as the goods are on hand (n, o, p). ” “ What do you estimate for the times to do these tasks? ” asked Mike.

The director of manufacturing estimated 18, 8, and 4 weeks for the purchasing phase for each of the subsystems in that order and four weeks for each of the installations. Then I can regard my job as done with the delivery of the procedures and when I show my 95 percent yield,” said Mike, and the director of manufacturing agreed, but reminded Mike that none of the purchasing cycles could start until the capital equipment list had been prepared and approved (j) which he saw as a three-week task. The executive committee of D. U.

Singer Hospital Products Corporation set a starting date for the project of March 10 and asked Mike to project a completion date with his submission of the plan. The committee’s request implied that whatever date Mike came up

with was acceptable, but Mike knew that he would be expected to show how to shorten the time to complete the project. However, his task in making the schedule was clear; he had to establish the resource requirements and deal with calendar constraints as best as he could. To this end, Mike had to get an estimate of resources which he decided to do by making a list of the activities and asking each group involved what was their level of employee input. The results of this survey are shown in Exhibit 1. For the purposes of overall planning, the accounting department told Mike that he could estimate a cost of $600 per week per employee.

This would enable him to provide a cash flow forecast along with his plan, which the chief accountant said would be expected, something that Mike had not realized. Mike knew that it was customary at D. U. Singer to provide the following as parts of a plan to be submitted to the executive committee: 1. Statement of Objectives. 2.

Work Breakdown Structure 3. An activity-on-node (PERT) network. 4. A determination of the critical path (s) and the duration along the path.

5. An activity list, early-start schedule, slack list, and master schedule. Assume every activity begins at its early start, regardless of resource constraints. 6.

A period labor requirements table for each group and the project as a whole. Include bar graphs to illustrate the labor loads. 7. A cumulative labor requirements table for each group and the project as a whole. Include line graphs to illustrate the cumulative loads. 8.

A schedule based on the best leveling of labor requirements that could be achieved without lengthening project duration by more than 14 percent in calendar days. 9. A cash flow requirements graph for the project when leveled, assuming that charges are uniformly distributed throughout the activity. Exhibit 1 Labor Requirements (Worker-weeks) Activity Packaging Task Force R & D Group Corp.

Eng. H-P Manuf. Pack. Prod. Manuf.

Maint. PurchasingMaterial & Other Direct Charges —prod. rationale11211200$ 0 b—dev. formula01642000500 c—prod. spec.

16311010 d—reg. document012422000 e—dev. pkg. conc. 128428024000 f —design pkg. 122303032000 g—dev.

proc. sys. 01812120000 h—dev. pkg.

sys. 248808020 i—study fac. req. 041622000 j—cap.

equip. list01300010 k—procure proc. eqpt011100740, 000 l—procure pkg. eqpt.

1010109160, 000 m—procure facil. 001111630, 000 n—install proc. eqpt02480414000 o—install pkg. eqpt. 20408418000 p—install fac.

005551016000 q, q’—written procedures55510151005000 r—pilot test36666600