Specific Equipment Needs and Potential for Development

a) Specific Equipment Needs

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b) Potential for Development

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a.) **SPECIFIC EQUIPMENT NEEDS**

**INTRODUCTION:**

Gentlemen, I thank you for this opportunity to be here with you today and consider it a privilege to be among such a distinguished group. My objective today will be to leave with you just one idea that will help you and your company achieve greater success. So in the next few minutes while I am presenting specific equipment needs, be looking for that one idea that you can take home with you to improve your own operation.

Let me begin by quickly reviewing some machines that are on the market today or will be shortly. First of all we see here a . . .

1. Bobcat 1075 w/Morbark Shear
2. Case W14 Feller
3. Fiat Allis 545B Feller Buncher
4. Clark 45 FB Ranger
5. Cat 930 w/Rome Shear
6. National Hydro-Ax 311 F/B Morbark Shear
7. JD544B w/Rome Feller Buncher
8. Timberjack 30 Feller Buncher Forwarder
9. Forano B5-20 Feller Buncher Forwarder
10. Forano Feller Buncher
11. Cat 225 w/Feller Buncher
12. IH 3966 Feller Buncher
13. Drott 40 w/Feller Head
14. JD693 w/Hurricana Felling Head
15. JD693 w/Rome Feller Buncher and JD693 w/JD4400 Shear Head Buncher.
16. Koehring Feller Delimber
17. JD743 Tree Harvester
18. JD743 Tree Harvester w/Accumulator
19. Cat 931 w/Fleco Shear
20. JD350B w/Allen Shear Plantation Thinning
21. JD450C Feller Buncher w/Mor bark Shear
22. JD450C w/Roanoke Shear
23. JD555 w/Mor bark Shear
24. Cat 931 w/Rome Hi-Speed Shear
25. JD555 w/Rome Hi-Speed Shear
26. JD544B w/Rome 300 series Hi-Speed Shear
27. Special Slide for End of Program

Now that we've seen some of the equipment that is available today we need to ask "Can one or more of these machines meet your thinning needs?" Or better said, "Can we get the job done with equipment that's available today?"

Before we can answer that question, we really need to back up for a minute and determine what your company's objectives are. What are your priorities -- solid wood products, pulp wood, maximizing tree growth, quick investment recovery, lowest cost harvesting, profit? Fortunately most well managed companies do have long-term objectives; unfortunately these objectives are generally tied to our economic system which is always changing. Improved technology also has an effect by improving the utilization of the wood that is harvested. All these factors must be considered when trying to determine your course or destination. In our Company we refer to this as being directionally sound. Are you directionally sound? Do you know where you want to go and how to get there?

Why do you need to determine your direction? -- Because this will more than likely determine your harvesting methods. And you must determine your method of harvesting before you select your equipment. That is to say, will you selectively thin, row thin, corridor thin, or use some variation. Once all this is determined, then you can list
your specific equipment needs. Then match your needs to what's available or work with a manufacturer to develop that ideal machine.

Now let's put all of that behind us and assume that we are directionally sound and we know what method of thinning we will use. May I suggest some analytical tools that you should use in establishing your system. One of these tools we call TREES - Technical Recommendations and Economics of Equipment Selection. This is nothing more than a computer simulation program that will help you to theoretically maximize a harvesting system. This is an off-shoot of the HSS, or (Harvesting Simulator System). At John Deere we have merely adapted the system and named it TREES. Several universities also use the system.

Another excellent tool that you should be using even with your current harvesting operation, is a stop watch -- yes, a stop watch. Jack Warren may have already taught some of you the "Fundamentals of System Analysis", but if you aren't familiar with it, please see Jack and ask him about the Fundamentals of System Analysis. You will need to know how to analyze each segment of the harvesting cycle before you can even consider developing a new machine to fit into the harvesting system.

So where do we go from here? With our Company objectives in mind, we've analyzed all the machines on the market today. To whom do you turn for help? Let me just say that most equipment manufacturers have a department called Market Development. These people have the responsibility of communicating ideas and customer needs back to engineering where requests for capital funds are made in order to develop those ideas. But this is not the only channel of communication; there are Area Marketing representatives, local equipment dealers and local equipment manufacturers, and don't forget your National Account Representative, such as myself. Let us know what your needs are, because as you will
learn from Bill Schmidt, we need your ideas and a great deal of time in order to develop new equipment.

Just so you don't feel short-changed today, I want to show you a slide of a prototype machine which has not yet been publicly introduced. This machine is the result of compiling many people's ideas and should put John Deere five years ahead of our closest competitor.

Gentlemen, thank you -- it's been a pleasure.
b.) Potential for Development

Good afternoon - David just covered specific equipment needs and gave us some insight into better utilizing what we have now. My task is to try and analyze the potential for developing new machines for our thinning problems.

To set the record straight - don't expect detailed blueprints for the ultimate machine - I'm sorry to say that you can't even expect a strong recommendation for the development of the ultimate machine. What I do hope you get is a very brief and cursory look at how things are (call it reality) and a few "food for thought" suggestions.

First, let's ask the question - what effects in time, cost, labor, and markets are there when major manufacturers (hereafter referred to as Mr. Big) make a basic design change in a machine. In order to get a general manufacturing average I contacted several Mr. Big's and used the example of changing a skidder transmission from the present configuration to a hydrostatic type.

For your information, no one got excited about the question so I assume that particular change isn't on anyone's drawing board.

Averaging the responses (which were amazingly similar) here is what happens:

1. Request to investigate

   In order to spend money and time exploring a new idea, approval must be obtained. The request, in itself, must have sufficient facts in order to compete for the funds available for investigating new products. Requests seem
to originate mostly from Mr. Big's market development division, although other inputs are possible.

(2) **Investigate**

This stage seems to last from 6 months to one year. There seems to be two parts.

(a) Market is defined as it relates to type of industry, geographical limits, competition status, number of units (a biggie) and dollar limits (what price market will pay).

(b) Once #(a). is gathered the marketing, engineering and manufacturing people must decide jointly if the ROI is enough to recommend continuing. Also, questions on amount of redesign involved, corporate strategy, etc. are answered.

(3) **Design**

The proposal is submitted to the board of directors where permission to design is obtained. The average time period from this point to where a machine is ready for sale averages 4 to 7 years. The cost of engineering and manufacturing averages 9 million dollars - and that's a minimum average if all goes well!

Of the 4 to 7 year period, 2 to 5 of it is the design period. Any new application of a component or mechanical innovation is designed and tested thoroughly by itself before being incorporated into a machine. A major goal is to keep the commonality of parts as high as possible with present machines. By the way - all the Mr. Big's felt that the transmission
change would have required a complete redesign of the whole machine.

(4) **Product Testing - Manufacturing Setup**

An average of 1 to 2 years is required for this step. Many programs are running concurrently by this time: Prototype testing, manufacturing space, ordering of essential items and vendor items, building of fixtures, manpower training, operator and other manuals printed.

There is a stage where a machine is built on the assembly line and then thoroughly tested to see if there are any weaknesses inherent when going from special build to assembly line.

(5) **Distribution**

Before the first customer is sold a machine, dealers must be trained, parts distributed, advertisements, and safety certificates issued. Once a unit is sold, the de-bugging that every manufacturer experiences starts, re-design continues, warranty information established (you pay for it) - in fact the process never really ends. Engineers are assigned to products or groups of products and the improvement process seems continuous.

Now that's the situation of just changing a transmission.

Now let's take the question of a new machine development to the small manufacturer - I'll call him Mr. Small.
It seems true that Mr. Small can cut that lead time dramatically but the risk and therefore the cost tends to be very high. Why does the cost get so high? The Mr. Big's spread their return or profit over large numbers of machines, in fact, real profit might not be realized until 1000 or more units are sold. Mr. Small, on the other hand, builds his profit into the first machine.

Mr. Small usually must rely on components from Mr. Big. It is not too unusual to have a CAT engine hooked to a Clark transmission with Deere axle or some other combination. There is little opportunity to design each component to efficiently match other components.

Parts can be a headache for Mr. Small, especially on the ONE OF A KIND machine. Each part has to be produced special at high cost.

This "one of a kind" from Mr. Small also strongly shifts the burden of testing onto the customer. And each redesign usually contains profits which keeps costs high.

Now that we have a basic understanding, let's say, in general, that Mr. Big will always tend to be slow in responding to immediate needs and the problem will be amplified if the machine is too job specific. Also, Mr. Small will normally be extremely high in both costs and risks with a severe limitation on ability to produce sufficient numbers of machines and parts.

Okay - with this information in hand let's ask the Mr. Big's to concentrate on building the best general carriers they can and have Mr. Small concentrate
on attachments that will make the basic carrier job specific. In this manner each of us could retain the uniqueness we desire at a much smaller cost in less time than now is possible - Sound logical?

Sorry fellows - we run into some problems with this approach also. As the engineers keep telling us, they can design the best skidder, or loader, or feller in the world but a basic carrier will, by its very nature, be a compromise from the beginning. Some unique qualities of each job specific machine will have to be sacrificed in order to have it function satisfactorily as a common carrier. And the machines we already have are badly compromised because of cost, technology, service life or other factors! More compromise would be disasterous.

That's not all. Most Mr. Big's have a corporate strategy that would have to change before it considers basic carriers. Remember I said a major difficulty was in being too job specific? Well now we run into the problem of not being specific enough. In general, Mr. Big's strategy is to serve identified markets with a family of machines where component commonality is very high.

Mr. Big also worries about losing the competitive advantage he has. If all basic carriers were built with standards so any attachment would fit (example: hydraulics, attachment points and types, h.p., life capacity, etc.) obviously we as customers would have little incentive to remain loyal to any one Mr. Big. We would tend to buy the cheapest.

And last but not least, the cost of designing a completely new basic carrier would carry a much higher price tag than the relatively simple
transmission change we discussed earlier. That and the other factors make this approach very unlikely - although everything is subject to change and the bottom line always reads ROI.

Okay - we've opened the door, peeked in, and seemingly have had it slammed in our faces - What can we do? We certainly need machines to accomplish our goals and Mr. Big and Mr. Small are our sources!

Answer: **BE CREATIVE**

Let's backtrack and look again. Realizing that Mr. Small can resolve our problem but at an unacceptable cost and Mr. Big can also solve our problem but over a tremendous time period with large unit numbers required, what can we do to keep the best of both?

We could encourage Mr. Small to use components of Mr. Big to the point where Mr. Big is also interested in helping Mr. Small with their expertise. If we as a forest industry could commit to, let's say 100 units to Mr. Small, the number is far below that required by Mr. Big but large enough to be a real eyecatcher for Mr. Small.

With Mr. Small having the assembly line responsibilities but using components from Mr. Big on a scale where good strong profits are assured then Mr. Big would, most likely, be willing to help in engineering to encourage even better component sales. Also parts are available through Mr. Big, Mr. Big makes profit at low risk, Mr. Small must stabilize and expand but guaranteed sales greases the skids for him; cost is high but not nearly as high as a one of a kind machine.
Rome and Fleco are good examples of what we could now term as Mr. Medium.

OR

The forest industry can "somehow" present a unified market of sufficient numbers to Mr. Big (unity of need) that Mr. Big will decide the market has the needed ROI. We need to remember that we, as equipment users, will have to agree on what has to be done and more importantly, how to do it. Which is something like getting a unanimous decision on which one of us should be laid off.

OR

Since it seems that new technology is a relatively slow process and drastic changes in the way we do things (harvesting) are highly unlikely, especially for 10 to 15 years (about the same time it would take to get a brand new machine on the market), what if we planted our trees in such a manner to reflect that we have already decided on the method of harvest - skidder, cable, chips, whole tree, etc. - what if we designed the plantation not for the maximum tree growth but for the optimum harvesting cost? This would not be too different than the approach much of the agricultural sector takes now.

Then there is always the possibility that some manufacturer somewhere has already anticipated the market and without our prodding is even now in the process of developing the machinery to solve our problems. There are times we act as though that is exactly what's happening.