

7854 OSCILLOSCOPE

NEW PRODUCT INTRODUCTION REVIEW

LAB SCOPES

LABORATORY INSTRUMENT DIVISION

PRODUCT DEVELOPMENT TEAM

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The Issue:

Time to Market

- **Opportunity Identification**
  
- **Proposed 7854**
  
- **Announcement — AP910**
  
- **Development Delays**
  - **Announcement in AP006**
  
  - **NEW COMPETITION**
  
  - **MARKET SHARE THREAT**

THE \$405M WORLD SCOPE MARKET  
FY800

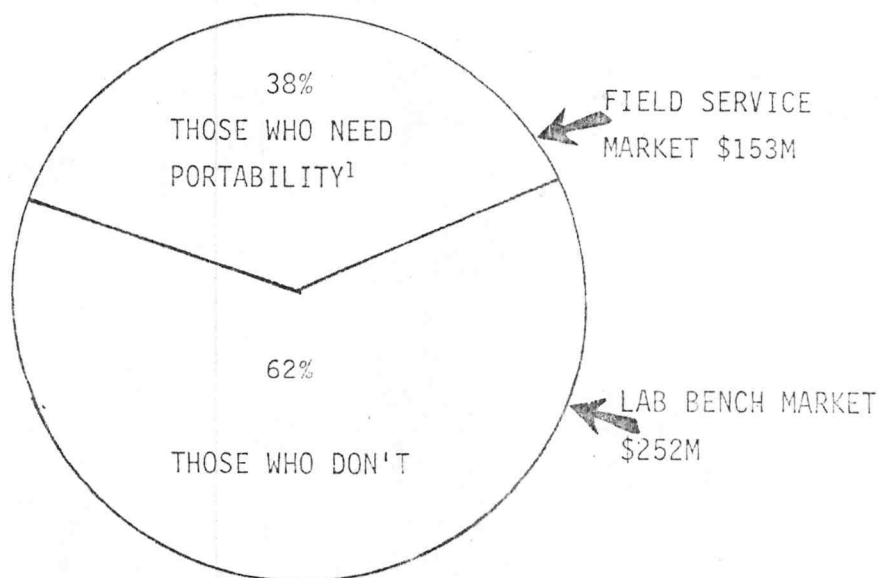


Figure 1

We define those customers who do not need portability as the Lab/Bench Market. Those customers who need portability comprise the Field Service Market. Both have historically grown at 11.3% per year; we expect these to grow at 10% per year for the next five years. SID will focus on the needs of the Field Service Market. This business plan will focus on the Lab/Bench Market.

We also divided the Lab/Bench Market into two distinct customer groups: those who need high performance<sup>2</sup> and/or measurement versatility and those who don't.

<sup>1</sup>Mobility to areas outside their institution.

<sup>2</sup>Greater than 350 MHz bandwidth.

THE \$252M WORLD LAB BENCH MARKET<sup>3</sup>  
FY800

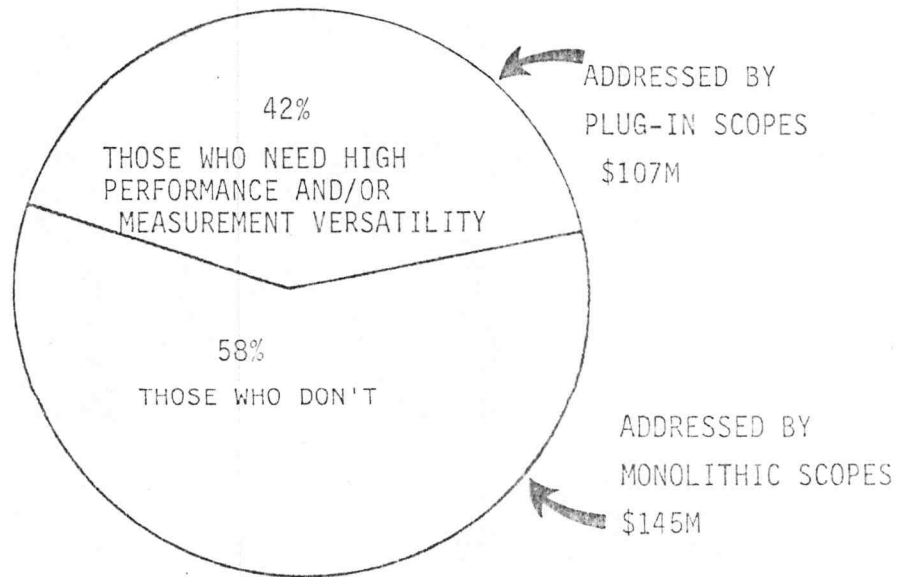


Figure 2

The 42% who need high performance and/or measurement versatility will be referred to as the plug-in segment of the Lab/Bench Market. Customers who don't, will be referred to as the non plug-in segment.

<sup>3</sup>For more detailed information on the Lab/Bench Market and it's growth rates, see the Lab Scope Business Plan FY900-FY300.

The Lab/Bench market is further segmented into four measurement disciplines:

- Electrical/Electronics
  - Physics
  - Medical
  - Mechanical
- } Addressed by the 7000 Series
- } Addressed by the 5000 Series

The first product for the Electrical/Electronics and Physics measurement discipline that addresses a need trend in waveform measurement needs is the 7854. The new trend addresses the decision making process of the typical Lab/Bench oscilloscope user. This process is illustrated in Figure 3.

#### BUSINESS OBJECTIVE

To continue meeting corporate market share and cash generation goals for our business unit.

#### GENERAL BUSINESS UNIT STRATEGIES (At the 7854 DC Review)

- To continue addressing the waveform measurement needs of the Lab/Bench market placing initial emphasis on the designers and researchers that need high performance and/or measurement versatility. (i.e., continue traditional charter).
- Let LDP/Logic Analyzer solve the digital measurement problems. (Charter removed from the Lab/Scopes group).
- Continue to focus on the high bandwidth requirements with the Lab/Bench market (i.e. 7104).
- Provide added value in future instruments in their ability to do more in the users decision making process than acquire and display signals, (i.e., pursue new opportunity with the 7854).

Other strategies are in place but for the remainder of this paper we will focus on an outline of the 7854 strategy independently.

# Definition of the Customer's Basic Need:

What is an oscilloscope user doing?

Making a measurement — No  
Making a decision — Yes

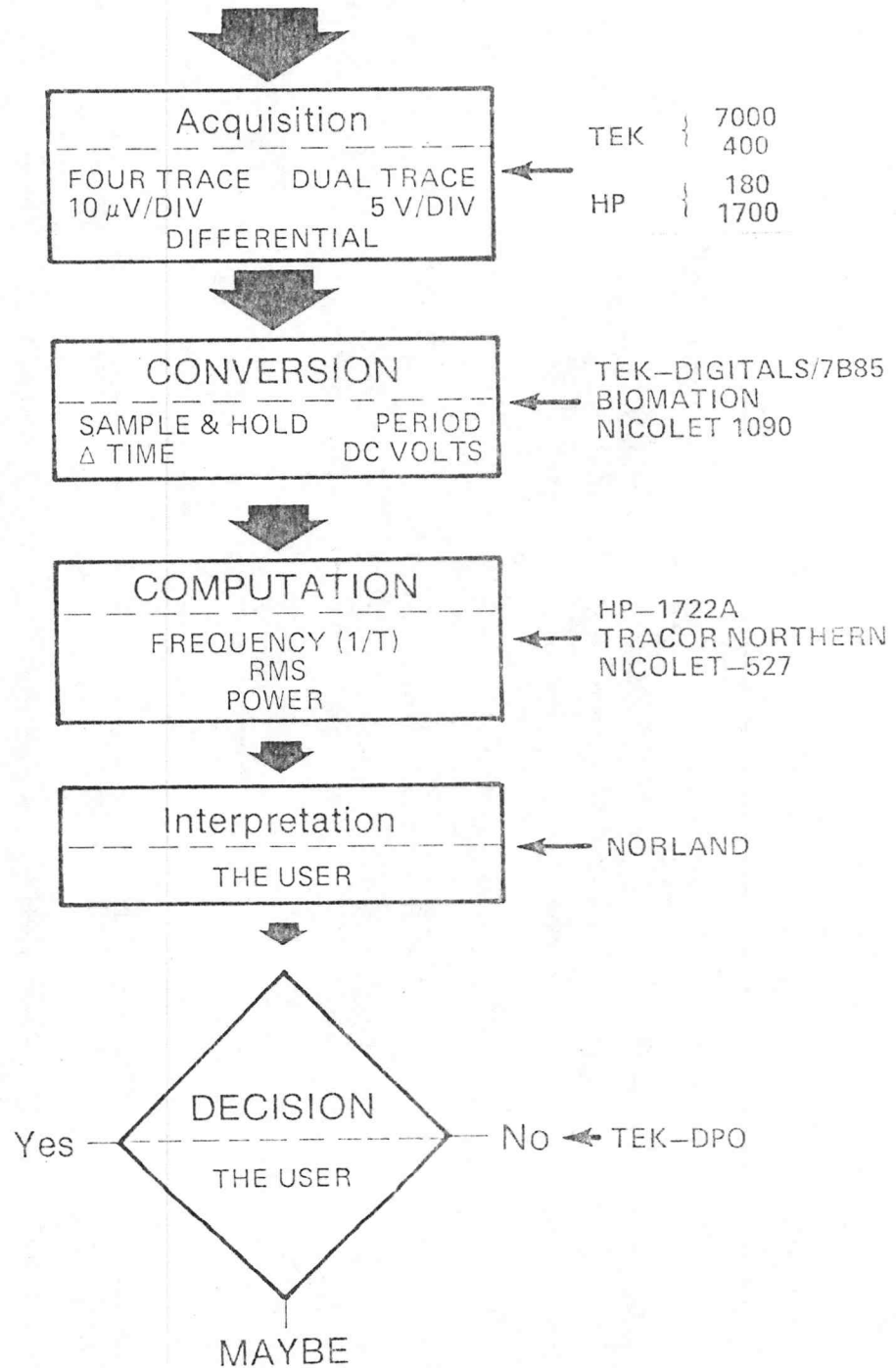


FIGURE 3.



## 7854 STRATEGIES

The Lab/Scope business unit will address the market needs that justified the 7854 development. In addition, SPS will use it as a component in their systems and continue to address Tek's traditional markets in that area.

The primary strategies for the 7854 as they relate to the Marketing mix are:

### ● PROMOTION

- Support the umbrella program strategies
- Target the promotion via media ads and PR at the Researchers and designers within our traditional market.
- Target initial systems promotion at our traditional markets in that area. (i.e., direct mail).
- Concentrate the majority of our efforts on the key market opportunities:

England  
Germany  
France  
Japan  
U.S.

### ● PRODUCT

- Position the 7854 as the next natural choice for conventional scope users (i.e., key on stand alone and GPIB benefits).
- And, as a valuable systems component in that market place.

### ● PERFORMANCE POSITIONING

- The bandwidth performance mean was  $\approx$  80 MHz in 1976. By the time we could get a product to market indicators suggested the mean would increase to 150 MHz. That mean increase happened and proved our decision to develop a 400 MHz package (instead of 100 MHz) was good.

### ● DISTRIBUTION

- Use the initial distribution channels and:

- Develop a cross credits and role recommendation for T & M S.E.'s and SPS Specialists.
- Prepare, through training, the T & M S.E.'s to sell the 7854 as a stand alone system. But, also provide them a means of proving it will function as a component of a system (via GPIB).
- Prepare the SPS specialist for systemization questions from customers and S.E.'s.
- Initially, concentrate on the geographic area's that offer us the best return at announcement (i.e., New England, California, New Mexico, and Texas in the U.S. In addition, we intend to focus on England, France, Germany, and Japan).

● PRICE

- Lab/Scopes
  - Slightly above traditional plug-in scopes at announcement. Then, after the concept is successful, we plan to increase at a rate greater than the plug-in scope average.

● SYSTEMS

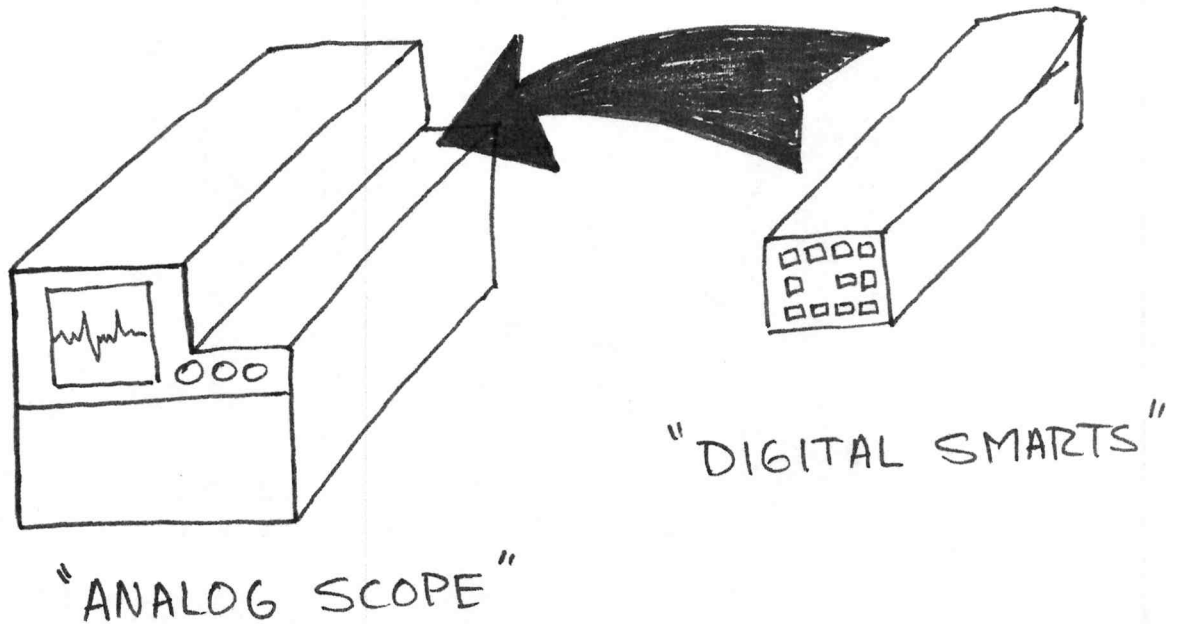
- Follow standard systems pricing policies.

## KEY FEATURES:

- 400 MHz BANDWIDTH  
500 PS TIMING
- ACCEPTS MOST EXISTING 7000 SERIES PLUG-INS.
- DOT-MATRIX READOUT REPLACES TEK STROKE FORMED CHARACTERS.
- FIXED-FUNCTION USER LANGUAGE
  - 2 KEYBOARDS INITIALLY AVAILABLE
  - RPN SYNTAX
- WAVEFORM STORAGE
  - UP TO 16 WAVEFORMS
  - UP TO .1% RESOLUTION (1024 POINTS PER WAVEFORM)
- WAVEFORM PARAMETER MEASUREMENT AND CALCULATION CAPABILITIES.
- 2-DOT WAVEFORM MEASUREMENTS.
- TO BE UL LISTED.

## UNDERSTANDING THE 7854's PHYSICAL STRUCTURE

We are taking advantage of the fact that the product neatly separates into separate units. . . . Analog and Digital. . . . to improve manufacturability.



Each can be built and tested totally independently of each other.

ESTIMATED STANDARD MANUFACTURING COST

|   |        |
|---|--------|
| STANDARD CONFIGURATION                                  | \$2559 |
| Includes Mainframe with Waveform<br>Calculator and GPIB |        |
| OPTIONS   |        |
| Add X-Y Compensation                                    | +16    |
| Add EMI   | +39    |
| Delete Calculator/GPIB                                  | -146   |
| Delete GPIB   | -56    |
| Add Expanded Memory                                     | +92    |

These estimates are based on the PR costing made by Don Branda in January 1979. FY900 labor rates were used.

FIELD SERVICE

7854's will be serviced at 11 locations initially:

U.S.

Factory  
Irvine  
Santa Clara  
Boston  
Albuquerque  
Rockville

International

Japan  
Germany  
France  
Holland  
England

The service support goal will be to provide five day or less turn-around-time for at least 80% of the instrument.

## RELIABILITY

The 7854 design team recognized early that reliability was an important consideration, due to the complexity of the box.

Initial MTBF goals were set at ~700 hrs., later increased to between 1000 and 1500 hours.

Demonstrated MTBF on two  $A\phi$  instruments has been very encouraging, and is compared to the 7904:

7904  
~925 hrs

7854  
~1500 hrs

NOTE: The 7854 has twice as many components as the 7904!

Calculated MTBF for the 7854 is 1470 hrs.

Goals are readily met thru conservative design, liberal use of pre-conditioned active components, large reduction of socketing, and a 200 hr. manufacturing bake in period.

# MARKETING PLAN:

| 001 | 002 | 003 | 004 | 005   | 006   | 007 |
|-----|-----|-----|-----|-------|-------|-----|
| 22  | 28  |     |     | 40 42 | 44 46 | 50  |
| ERA | ERD |     |     | PSR   | PA    | CA  |

SHIP DEMOS

INT.

10

U.S.

15

FE TRAINING



Marketing Introduction Requirements  
 Set the Pace for the  
 Product Introduction Process.



# FACTORY SERVICE PLAN:

|     |     |       |     |     |       |     |
|-----|-----|-------|-----|-----|-------|-----|
| 001 | 002 | 003   | 004 | 005 | 006   | 007 |
| 22  | 28  | 32 34 |     | 40  | 44 46 |     |
| ERA | ERD |       |     | FSR | PA    | CA  |

TRAINING

TRAINERS

FIELD TECHS

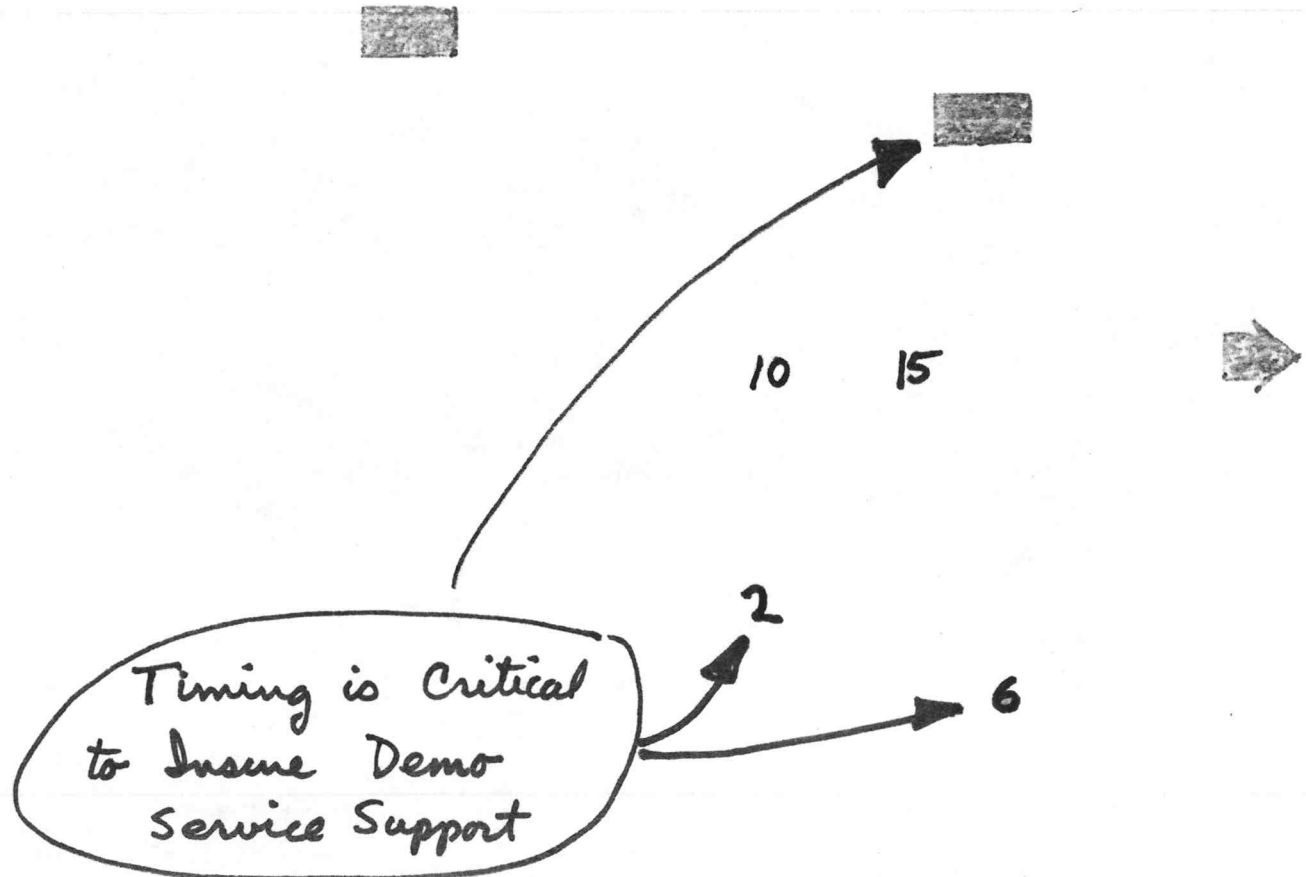
INSTRUMENTS

SHIPPED

067-0911-00

INT.

U.S.



# FACTORY SERVICE PLAN:

|     |     |       |     |     |       |     |
|-----|-----|-------|-----|-----|-------|-----|
| 001 | 002 | 003   | 004 | 005 | 006   | 007 |
| 22  | 28  | 32 34 |     | 40  | 44 46 |     |
| ERA | ERD |       |     | PSR | PA    | CA  |

TRAINING

TRAINERS

FIELD TECHS

INSTRUMENTS

SHIPPED

067-0911-00

INT.

U.S.

Timing is Critical to insure Demo Support



10

15



6

# SUPPORT TEST EQUIPMENT PLAN:

|     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 001 | 002 | 003 | 004 | 005 | 006 | 007 | 008 | 009 | 010 | 011 | 012 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

ER<sub>D</sub>

PSR

PA

CA

MLAB<sup>1</sup>

~CA

067-0911-00<sup>2</sup>

PSR/CA

HARDWARE

ER

PSR

FIRMWARE

FIR

FER

067-0912-00<sup>3</sup>

ER

PSR

1) MLAB is 067-0893-00, being developed by LDP.

2) 067-0911-00 is DIGITAL HARDWARE TEST SYSTEM,

3) 067-0912-00 is ANALOG TEST CARD

# MANUAL PLAN:

|     |                 |     |     |     |     |     |     |     |     |     |     |
|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 001 | 002             | 003 | 004 | 005 | 006 | 007 | 008 | 009 | 010 | 011 | 012 |
|     | ER <sub>2</sub> |     |     | PER | PA  | CA  |     |     |     |     |     |

## 7854 MANUALS

OPERATORS \*

SERVICE \*

SCHEMATIC \*

067-KXXX MANUALS

(\*)

\*

\* FINAL MANUALS BOUND

(\*) INTERIM MANUALS BOUND

# ENGINEERING PLAN:

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 910 | 911 | 912 | 913 | 001 | 002 | 003 |
| 6   | 10  | 14  | 18  | 22  | 28  |     |
|     |     |     |     | ERA | ERD |     |

NEW TEK COMP

ANALOG REL.



DIGITAL REL.



RELIABILITY

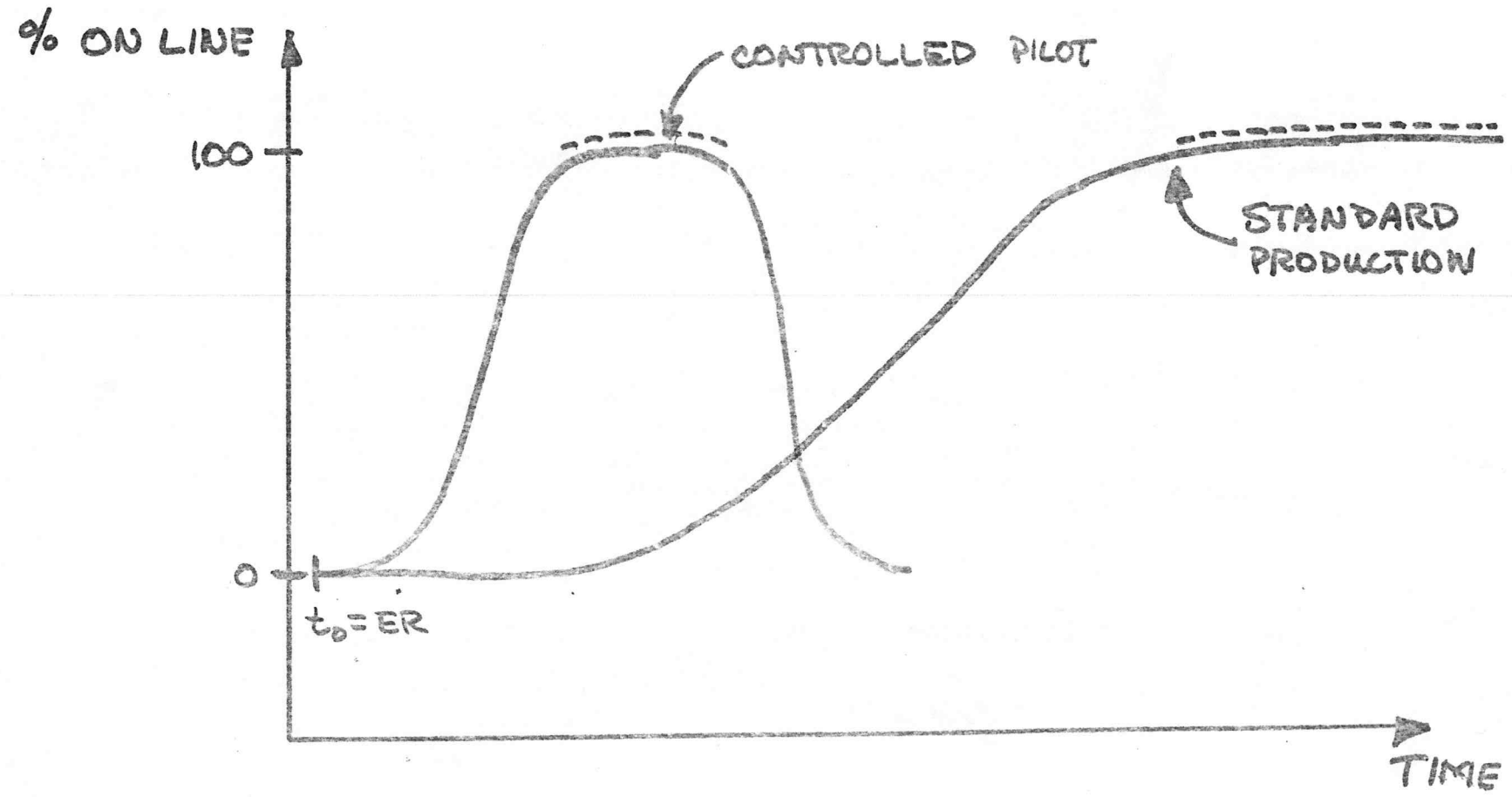


UL



- Distributed Release to Central Manufacturing of New Components ..... to reduce impact
- Submit for U.L. Registration, beginning about ER.

# MANUFACTURING CAPABILITY FOR COMING ON LINE WITH NEW PRODUCTS



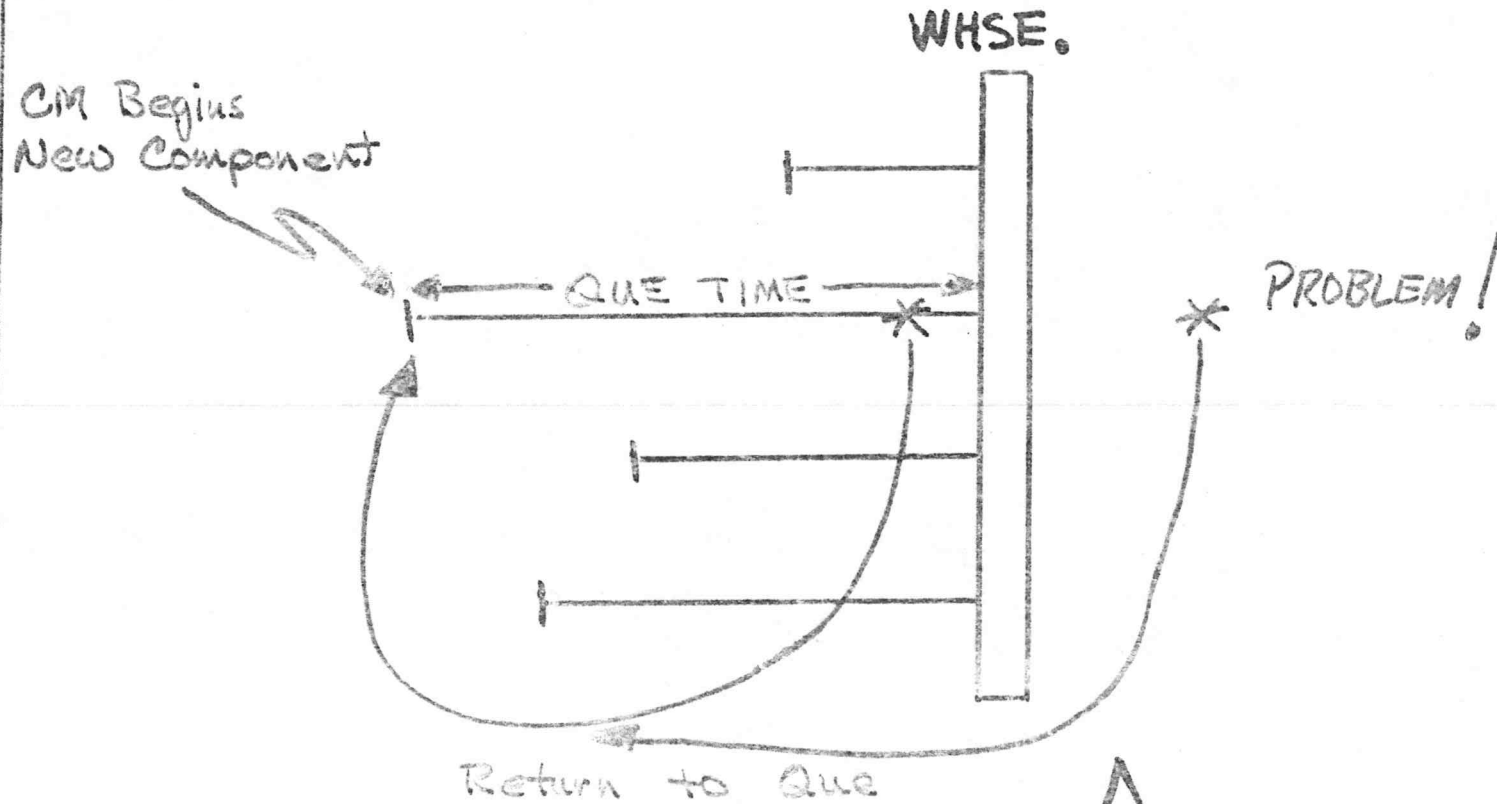
----- INSTRUMENTS OUTPUT FOR SHIPMENT

## The Problem with the Current System:

The System Requirements Imposed by Netting and Central Manufacturing for the Purpose of Tightly Controlling Inventory and Meeting Service Level Requirements are Not Conducive towards Effective New Product Start-Ups.

(They are probably fine for established products).

Examples:



Large Number of Components Arrive Simultaneously in Manufacturing



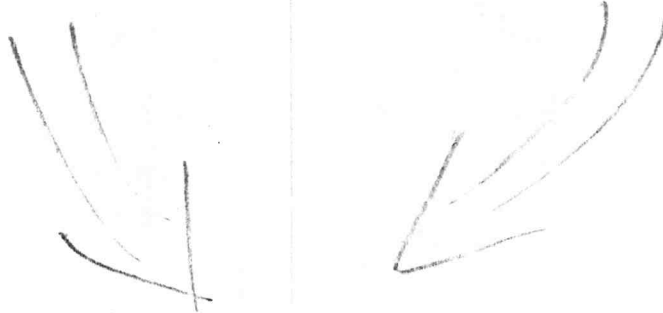
# Our Solution:

## MFG

- 2 Assemblers
- 1 Finaler
- 3-4 Technicians

## ENG

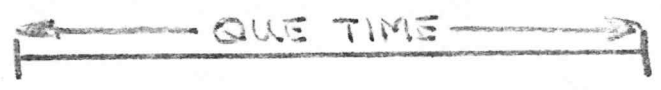
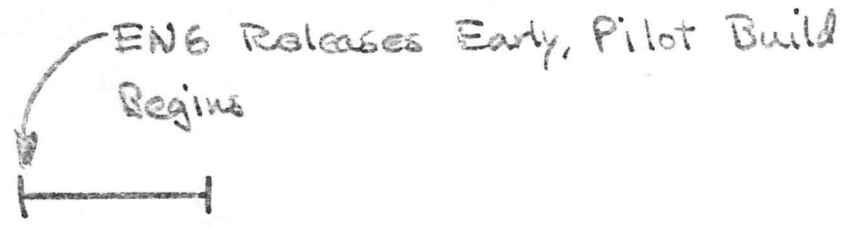
- Prototype Lead Person
- Source of Components Especially Tok Made



# PILOT...

- 25 Sable Instruments...
- Quickly!
- More Business Unit Control
- Less Dependence on Central Manufacturing.

# Examples:



ER



Pilot Build Begins  
Sooner...  
Fewer Problems

Component Delivery Spread Over Time;  
Distributes Work Load and Problems

# MANUFACTURING PLAN:

| 001             |    |    | 002             |    | 003 |    | 004 |    | 005 |    | 006 |    | 007 |    |
|-----------------|----|----|-----------------|----|-----|----|-----|----|-----|----|-----|----|-----|----|
| 22              | 24 | 26 | 28              | 30 | 32  | 34 | 36  | 38 | 40  | 42 | 44  | 46 | 48  | 50 |
| FR <sub>A</sub> |    |    | FR <sub>D</sub> |    | PSR |    |     |    | PA  |    | CA  |    |     |    |

SPECIAL PILOT  
STANDARD PROD  
ANALOG

BUILD  
TEST

3 5 5 6 6  
3 5 5 6 6

2 2 3 3 3 3 4 5 5 5 5

DIGITAL  
BUILD  
TEST

3 5 5 6 6  
3 5 5 6 6

2 2 3 3 3 3 4 5 5

200 HR BAKE

3 5 5 6 6

RETEST/OC

3 5 5 6 6

SHIP

INT DEMO  
US DEMO  
RELIABILITY

10

15

10

(105)

SPECIFIC NEEDS IN ORDER TO MEET GOALS

Special procurement of the new Tek made components (28 sets):

- ECB's (29)
- Metal Parts (40)
- Plastic Parts (5)
- Front and Rear Panels (3)
- H752 Vertical Channel Switch Hybrid (1)
- M207 Vertical Pick-off IC (1)
- Pre-conditioned components (several hundred)
- Additional Support for 067-0911-00
- Thickfilm Resistor (1)
- Transformers (5)
- Keyswitch Assemblies (126)

CRITICAL PATHS:

ENGINEERING

- Must achieve DIGITIZER performance goals
- Must have timely support from Tek Labs and Operations

ECB's  
CAD  
HYBRIDS  
COSTING  
MODEL SHOP  
SWITCH DESIGN

- No allowance for 'SERIOUS SURPRISES'

MANUFACTURING

- Must have a CLEAN ER
- Engineering must release components on time to support SPECIAL PILOT
- All parts must arrive on time
- New test gear must be available on schedule
- ROMS

FIELD SERVICE

- Training must occur on schedule
- Test gear and interim documentation must be available on schedule

# Time to Market

In order to reduce it....

- Centralized Support Groups Must Provide Adequate Support During the Final Development Phases.
- Corporate Must Allow and Support a Special PILOT build.