

## ENGINEERING OBJECTIVES FY 1985

### CURRENT PRODUCTS QUANTUM CORPORATION

By September 1, 1985 achieve the following on the Q500:

- P.A. & T. 70%
- MTBF > 15K hours
- Field return rate (on 45 day returned) < 1.5%

### FISCAL YEAR 1986

- Maintain the above level of response of Q500 production life.
- Manage Q500 issues such that engineers can be released to start new product development no later than September, 1985.
- Support successful Q500 transfer to Carite:
  - Continue to meet customer commitments during transition.
  - Quality/Reliability of units shipped from Carite equal to, or better than, those shipped from Milpitas.
- Maintain the reputation of being responsive to customer needs.

APRIL 11, 1985

Art Geffon

## ENGINEERING OBJECTIVES FY 1986

Number of support personnel

Drive Engineering	28
Test Engineering	21
Documentation	
Production Eng.	22

### CURRENT PRODUCTS

- By September 1, 1985 achieve the following on the Q500:
  - F.A. & T. yields > 65%
  - MTBF > 15K hours
  - Field return rate (on 45 day returns) < 1.5%
- Diagnose of line failures
- Maintain the above levels for remainder of Q500 production life.
- Manage Q500 issues such that engineers can be released to start new product development no later than September, 1985.
- Support successful Q500 transfer to Caribe:
  - Continue to meet customer commitments during transition.
  - Quality/Reliability of units shipped from Caribe equal to, or better than, those shipped from Milpitas.
- Support Caribe response of D.R.T. failures
- Maintain the reputation of being responsive to customer needs.

Area of Q500 focus

- Support line
- Investigation of low yields

Q500/Q2000/Q2080

- Number of support personnel

Drive Engineering	26
Test Engineering	21
Documentation	5
Production Engineering	<u>11</u>
	62

	FW	Projected
• Areas of Q500 focus	95	95
- Subassembly yields	98	95
- Final assembly yields	94	97
- Known reliability issues	93	94
- Diagnosis of line failures	99	95
- Diagnosis of O.R.T. failures	97	90
- Customer issues	85	90
- Caribe transfer	93	95
- Support Supplier Assurance	100	100

- Areas of Q2000 focus
  - Support Caribe diagnosis of O.R.T. failures
  - Investigation of proposed EC's (mainly to documentation)

- Areas of Q2080 focus
  - Support line
  - Investigation of low yields

ENGINEERING OBJECTIVES FY 1985

**Q500 YIELD PROJECTIONS**

	<u>FW 50</u>	<u>Projected</u>
T-1	94	96
Part. Count	98	98
Servo Warm-up	94	97
Servo Write	98	98
Burn In	89	95
Scanner	87	90
ACT	85	90
Final Prep	93	95
Ship Audit	100	100
<b>TOTAL</b>	<b>52%</b>	<b>65%</b>

Q200 INTERFUNCTIONAL TEAM OBJECTIVES

**ENGINEERING OBJECTIVES FY 1986**

**Q200 DEVELOPMENT**

	<u>March 1985</u>	<u>September 1985</u>
Yield (PA & T)	70%	85%
Scrap (\$ per drive)	\$15	\$8
• Build 30 demo units by August 8, 1985.		
• Build 200 pre-production units by October 28, 1985.		
• Complete product and process design to insure shipment of:		
300 production units by January 1, 1986		
3000 production units in FY 1986		
• Set FY 1986 cost, reliability and yield targets by May 1, 1985.		
• Learning rate (cost, reliability and yields) to exceed any Quantum product to date. Set targets by May 1, 1985.		

## Q200 INTERFUNCTIONAL TEAM OBJECTIVES

### QMS DESIGN PHILOSOPHY

	<u>March 1986</u>	<u>September 1986</u>
Yield (FA & T)	70%	85%
Scrap (\$ per drive)	\$15	\$8
Rework (hours per drive)	.75 hrs.	.3 hrs.
MTBF (ORT)	18K hrs.	25K hrs.
Labor hours (per drive)	3.0 hrs.	2.2 hrs.
WIP Inventory	1.5 days	1.1 days
Vendors (PIC)		
On-Time	90%	95%
Acceptance	95%	98%
Customer Acceptance	95%	99%

## Q200 STATUS

### GENERAL

### Q200 DESIGN PHILOSOPHY

- On schedule
- SCSI command set defined
- Product and process designed in parallel. Team approach.
- Define requirements of purchased parts and subassemblies up front. 100% good parts to final assembly line.
- Define drive requirements up front.
- Focus on manufacturing cost.
- SCSI Interface allows us to achieve both lowest cost and highest performance.
- Design for reproducibility and testability. Understand distribution of parts parameters and process capability.
- Automate where appropriate. week in April

### ELECTRONICS

- Hardware design complete
- Servo system demonstrated
- Software on schedule
- Two custom chips being put into gate arrays

### PROCESS

- Flow defined
- Design of transfer line under way
- Only automated station so far is disk loading
- May end up with six total automated stations
- Other automation added based on yields and cost



Q200 STATUS

GENERAL

- On schedule
- SCSI command set defined
- First pass at drive spec complete
- Cost Analysis

	<u>Q500</u>	<u>Q200</u>
Cumulative Units	50K	50K
Material Cost (\$)	431	355
Labor Cost (\$)	29	18

MECHANICS

- Design complete
- Proto parts due in first week in April
- Only issue so far is start/stop media wear
- Parts being put onto CAD system

ELECTRONICS

- Hardware design complete
- Servo system demonstrated
- Software on schedule
- Two custom chips being put into gate arrays

PROCESS

- Flow defined
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Q200 RISKSTECHNOLOGICAL RISKS:

RESONANCE OF STRAIGHT HEADS	JUNE
SETTLING TIME	MAY-JUNE
EMBEDDED SERVO SCHEME	DEC-JUNE
NATIONAL PULSE DETECTOR AND DATA SYNCH CHIPS	MAY-JUNE
STOP/START TESTS	MAY
ACTUATOR SPINDLE DESIGN	JUNE

AVAILABILITY/COST RISKS:

THIN FILM MEDIA	FALL
DMTI SCSI PROTOCOL CHIP	MAY
HITACHI MOTOR DRIVER SHIP	JUNE
SURFACE MOUNTED DEVICES	JUNE
PATENT ON STRAIGHT HEADS	?

IMPLEMENTATION RISKS:

COMMAND SET DEFINITION	JANUARY
COMMAND SET IMPLEMENTATION	AUG-DEC
USER CONFIGURABLE BLOCK SIZE	AUGUST

SCHEDULE RISKS:

PRODUCTION OF GATE ARRAYS	JULY-AUGUST
CONTROLLER DESIGN	JUNE

## **ENGINEERING OBJECTIVES FY 1986**

### **ORGANIZATIONAL DEVELOPMENT**

- Each manager to state one departmental objective for each of the 5 corporate values.
- All reviews to be done on time.
- Expand scope of team building activities to include all management levels across all functions.
- Identify managerial candidates by June 1, 1985 and develop training program with Human Resources.
- New design tools - Introduce and use
  - LSI CAD/CAM
  - Mechanical CAD
  - Use of Mac's and Lisa's

## ENGINEERING OBJECTIVES FY 1986

### NEW PRODUCT & TECHNOLOGY DEVELOPMENT

- Define new product with Marketing by August, 1985.
- Start development by September, 1985 or earlier if Q500 yield and reliability targets are met.
- Keep abreast of new technology that is likely to have an impact on our future business.
  - LSI
  - Optical
  - Manufacturing process
- Hire person from Optical Recording Industry into Engineering to bring Optical Technology in-house.

APRIL 11, 1985

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