• ISS IS THE MOST EXPERIENCED DISK SUPPLIER

12/67 ISS FOUNDED

8/69 SHIPPED ISS 701 (7.25 MB)
  – 2311 COMPATIBLE
  – 30 MS AVG ACCESS (VS. 75 MS)
  – VOICE COIL ACTUATOR (VS. HYDRAULIC)
  – OPTICAL POSITIONING/CLOSED LOOP SERVO (VS. DETENT)
  – 15 SECOND START-UP (VS. 60 SEC.)

4/70 SHIPPED ISS 714 (29 MB)
  – 2314 COMPATIBLE

6/71 SHIPPED ISS 715 (58 MB)
  – NO IBM EQUIVALENT
  – MOST SUCCESSFUL DOUBLE DENSITY DRIVE
ISS IS THE MOST EXPERIENCED DISK SUPPLIER

9/72   SHIPPED ISS 7330 (100 MB)
      - 3330 COMPATIBLE
      - OVER 12,000 SHIPPED TO DATE
      - MOST SUCCESSFUL INDEPENDENT 100 MB DRIVE

2/75   SHIPPED ISS 7330-11 (200 MB)
      - 3330-11 COMPATIBLE
      - SELECTED BY LARGEST PCM COMPANY

1976   WILL SHIP THIS YEAR
      - ISS 7330-12 (317.5 MB)
      - 3350 COMPATIBLE
ISS HAS THE GREATEST TECHNICAL STRENGTH

- TECHNOLOGY AND DESIGN SKILLS DEMONSTRATED IN LONG LIST OF INDUSTRY FIRSTS

- SOPHISTICATED CONTROLLER CAPABILITY

  728    7830
  730    7833
    5039

- EXTENSIVE PACK WRITING FACILITY

- MOST EXTENSIVE FIELD FEEDBACK; OVER 28,000 DRIVES AND CONTROLLERS SHIPPED TO DATE

- HIGH VOLUME PRODUCTION CAPABILITY
ISS IS FINANCIALLY STRONG

- BACKED BY RESOURCES OF SPERRY RAND
  70TH LARGEST U. S. CORPORATION
  $3 BILLION REVENUE IN FISCAL 1975

- LARGEST INDEPENDENT DISK SUPPLIER
THE ISS TECHNOLOGY PYRAMID

TECHNICAL CAPABILITY AND LONG TERM STABILITY OF ISS TECHNICAL STAFF
# THE ISS TECHNOLOGY PYRAMID

<table>
<thead>
<tr>
<th>IBM MODEL</th>
<th>ISS MODEL</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2311</td>
<td>701</td>
<td>SHIPPED 8/69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.25 x 10^6 BYTES</td>
</tr>
<tr>
<td>7.25 x 10^6 BYTES</td>
<td>701</td>
<td>PATENT: FILED 1/69, ISSUED 8/71</td>
</tr>
<tr>
<td>HYDRAULIC ACTUATOR</td>
<td>7.25 x 10^6 BYTES</td>
<td></td>
</tr>
<tr>
<td>DETENT MECHANISM</td>
<td>VOICE COIL ACTUATOR</td>
<td></td>
</tr>
<tr>
<td>75 MSEC ACCESS TIME</td>
<td>OPTICAL POSITIONING/100% CLOSED LOOP SERVO</td>
<td></td>
</tr>
<tr>
<td>701, 714, 715</td>
<td>30 MSEC ACCESS TIME. ISS SET NEW STANDARD.</td>
<td></td>
</tr>
<tr>
<td>60 SECOND START-UP</td>
<td>ELECTRONIC TACHOMETER</td>
<td></td>
</tr>
<tr>
<td>701, 714, 715</td>
<td>PATENT: 1/69 – 3/71</td>
<td></td>
</tr>
<tr>
<td>7330, 7330-11, 7330-12</td>
<td>15 SECOND START-UP TEMPERATURE COMP</td>
<td></td>
</tr>
<tr>
<td>701, 714, 715</td>
<td>PATENT: 9/68 – 9/70</td>
<td></td>
</tr>
<tr>
<td>701, 714, 715</td>
<td>SINGLE ELECTRICAL ADJUSTMENT – LOW SERVICE COSTS</td>
<td></td>
</tr>
<tr>
<td>701, 714, 715, 7330</td>
<td>PATENT: BALANCER</td>
<td>8/69 – 8/71</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>PATENT: DISK DRIVE CONTROL</td>
<td>8/70 – 6/72</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>PATENT: VELOCITY SAFETY</td>
<td>7/69 – 12/71</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>PATENT: SAFETY UNLOAD</td>
<td>8/69 – 12/71</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>PATENT: A.C. UNSAFE</td>
<td>6/70 – 12/71</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>PATENT: SERVO STABILIZER</td>
<td>6/70 – 4/72</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>PATENT: 100% PULSER POWER DRIVER</td>
<td>3/69 – 6/71</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>OTHER: 701 PATENTS:</td>
<td></td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>HEAD LOAD CAMS</td>
<td>9/68 – 9/70</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>CARRIAGE MECH.</td>
<td>1/69 – 6/71</td>
</tr>
<tr>
<td>701, 714, 715, 7330, 7330-11, 7330-12</td>
<td>HEAD/ARM MOUNT</td>
<td>1/70 – 10/71</td>
</tr>
</tbody>
</table>
# THE ISS TECHNOLOGY PYRAMID

## IBM MODEL | ISS/MODEL | FEATURES
--- | --- | ---
2314 | 714 | SHIPPED 4/70

- 29 x 10⁶ BYTES
- HYDRAULIC ACTUATOR
- DETENT MECHANISM
- 75 MSEC ACCESS TIME
- 60 SEC START-UP

IBM HAS NONE

## IBM MODEL | ISS/MODEL | FEATURES
--- | --- | ---
715 | 714 | DOUBLE DENSITY 714, SHIPPED 6/71

- 58 x 10⁶ BYTES
- 200 TPI NON-TRACK FOLLOWING
- VOICE COIL ACTUATOR
- OPTICAL POSITIONING/100% CLOSED LOOP SERVO

## IBM MODEL | ISS/MODEL | FEATURES
--- | --- | ---
714, 715 | 715 | PATENT: ACTIVE TEMP. COMP. 8/71 – 8/73

- SYNCH WIGGLER 8/71 – 4/73
- DEFECT DETECTOR 8/71 – 9/73
- ACCURATE HEAD ALIGNMENT 12/71 – 6/73

## IBM MODEL | ISS/MODEL | FEATURES
--- | --- | ---
715, 7330, 7330-11, 7330-12 | 715, 7330, 7330-11, 7330-12 | PATENT: LINEAR POSITION APPARATUS 8/71 – 6/73

- 29 MSEC ACCESS TIME

## IBM MODEL | ISS/MODEL | FEATURES
--- | --- | ---
728 CONTROL UNIT | 728 CONTROL UNIT | VFO SYSTEM WITH ONLY TWO ELECTRICAL ADJUSTMENTS AND NO TAPPED DELAY LINE.

- VFO OSCILLATOR 4/70 – 9/72
- FOUR CHANNEL SWITCH SHIPPED 8/70
# THE ISS TECHNOLOGY PYRAMID

## IBM MODEL

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>3330</td>
<td>100 x 10^6 BYTES</td>
</tr>
<tr>
<td></td>
<td>100% CLOSED LOOP SERVO</td>
</tr>
<tr>
<td></td>
<td>30 MSEC ACCESS TIME</td>
</tr>
<tr>
<td></td>
<td>TWO MECHANICAL TACHOMETERS</td>
</tr>
<tr>
<td></td>
<td>INTEGRATION OF MOTOR CURRENT COMPENSATION</td>
</tr>
</tbody>
</table>

## ISS MODEL

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>7330</td>
<td>SHIPPED 9/72</td>
</tr>
<tr>
<td></td>
<td>100 x 10^6 BYTES</td>
</tr>
<tr>
<td></td>
<td>VOICE COIL ACTUATOR</td>
</tr>
<tr>
<td></td>
<td>100% CLOSED LOOP SERVO</td>
</tr>
<tr>
<td></td>
<td>TRACK FOLLOWING</td>
</tr>
<tr>
<td></td>
<td>27 MSEC ACCESS TIME</td>
</tr>
<tr>
<td></td>
<td>100% PULSER POWER DRIVER 1ST SHIPPED 8/69</td>
</tr>
<tr>
<td></td>
<td>ELECTRONIC TACHOMETER 1ST SHIPPED 8/69</td>
</tr>
<tr>
<td></td>
<td>ELECTRONIC FAIL SAFE RESERVOIR</td>
</tr>
</tbody>
</table>

## FEATURES

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
<th>Patent Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>7330, 7330-11, 7330-12</td>
<td>PATENT: ADVANCED FILE CAP. 7/72 - 4/74</td>
<td></td>
</tr>
<tr>
<td>7330, 7330-11, 7330-12</td>
<td>PATENT: RUN-OUT COMPE. 8/72 - 4/74</td>
<td></td>
</tr>
<tr>
<td>7330, 7330-11, 7330-12</td>
<td>PATENT: BASEPLATE ASSY 8/71 - 10/73</td>
<td></td>
</tr>
<tr>
<td>7330, 7330-11, 7330-12</td>
<td>PATENT: EMA CENTER DEV. 4/71 - 6/73</td>
<td></td>
</tr>
<tr>
<td>7330</td>
<td>PATENT: ELECT. VELOC. SYST. 8/72 - 5/74</td>
<td></td>
</tr>
<tr>
<td>7330</td>
<td>ONE OTHER PATENT PENDING</td>
<td></td>
</tr>
<tr>
<td>7330</td>
<td>SHIPPED 2/75</td>
<td></td>
</tr>
<tr>
<td>7330-11</td>
<td>200 x 10^6 BYTES</td>
<td></td>
</tr>
<tr>
<td>7330-11, 7330-12</td>
<td>PATENT: ADVANCED FILE CAP 7/72 - 4/74(1)</td>
<td></td>
</tr>
<tr>
<td>7330-11, 7330-12</td>
<td>PATENT: ACT. FOR DISK DRIVE 2/74 PENDING</td>
<td></td>
</tr>
<tr>
<td>7330-11, 7330-12</td>
<td>PATENT: DELAY LINE COMP. 3/68 - 6/70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FOUR OTHER PATENT APPLICATIONS IN PROCESS IN THE AREAS OF TACHOMETER SYSTEMS, FILTER TECHNIQUES, AND SELF ADAPTIVE SYSTEMS.</td>
<td></td>
</tr>
</tbody>
</table>

(1) FIRST SHIPPED 9/72
ISS TRACK FOLLOWING TECHNOLOGY DISK PACKWRITER

6/70  ISS STARTED TO DEVELOP TRACK FOLLOWING
12/71  ISS RECOGNIZED NON IBM C.E. PACK CRISIS
1/72  ISS DESIGNED AND CONSTRUCTED PACKWRITER FACILITY
9/72  ISS SHIPPED IBM 3336 COMPATIBLE C.E. PACK

TODAY, ISS WRITES SERVO SURFACE AND C.E. ALIGNMENT PACKS FOR UNIVAC, IBM COMPATIBLE, AND OTHER INDEPENDENT MANUFACTURERS.
THE ISS TECHNOLOGY PYRAMID

THE ISS TECHNOLOGY PYRAMID

7330 FAMILY

ISS PACKWRITER TECHNOLOGY AND FACILITY S. 9/72

FILTER TECHNIQUE P.I.P. S. 2/75
SELF ADAPTIVE SYSTEMS P.I.P. S. 2/75

ACTUATOR FOR DISK DRIVES P. S. 2/75
DELAY LINE COMPENSATOR P. S. 2/75
TACHOMETER SYSTEM P.I.P. S. 2/75

RUN-OUT COMPENSATOR P. 5 9/72
BASE PLATE ASSEMBLY P. S. 9/72
EMA CENTERING DEVICE P. S. 9/72
ELECTRONIC VELOCITY SYSTEM P. S. 9/72

EARLY ARRIVAL P. S. 6/71
TRACK FOLLOWING S. 9/72
27 MSEC ACCESS TIME S. 9/72
ELECTRONIC FAIL SAFE RESERVOIR S. 9/72
ADVANCED FILE CAPABILITY P. S. 9/72

ACTIVE TEMPERATURE COMPENSATION P. S. 6/71
SYNCHRONIZED WIGGLER P. S. 6/71
DEFECT DETECTOR P. S. 6/71
ACCURATE HEAD ALIGNMENT P. S. 6/71
LINEAR POSITION APPARATUS P. S. 6/71
29 MSEC ACCESS TIME S. 6/71

SAFETY-UNLOAD P. S. 8/69
SERVO STABILIZER P. S. 8/69
100% PULSER POWER DRIVER P. S. 8/69
HEAD LOAD CAMS
CARRIAGE MECHANISM
HEAD/ARM MOUNTING
200 T.P.I. NON-TRACK FOLLOWING S. 6/71

VOICE-COIL ACTUATOR S. 8/69
OPTICAL POSITIONING 100% CLOSED-LOOP SERVO P. S. 8/69
30 M SEC. SET NEW STANDARD TEMP. COMP. S. 8/69
15 SEC. START-UP TEMPERATURE ADJUSTMENT S. 8/69
SINGLE ELECTRICAL ADJUSTMENT S. 8/69
BALANCER P. S. 8/69
DISK-DRIVE CONTROL P. S. 8/69
VELOCITY SAFETY P. S. 8/69

TECHNICAL CAPABILITY AND LONG TERM STABILITY OF ISS TECHNICAL STAFF

P = PATENT
S = SHIPPED
THE 7833 DISK SUBSYSTEM
FEATURES:

- FOUR CHANNEL SWITCH CAPABILITY
- SIXTEEN DRIVE ADDRESSING
- DYNAMIC POWER SEQUENCING AND POWER DISTRIBUTION
- 7330 DOUBLE CAPACITY CAPABILITY
- ROM/PROM MEMORY
- MICRO PROGRAM PARTITIONING
COMPARISON

STRING SWITCHING DEPENDENCE VS. DEVICE SWITCHING INDEPENDENCE

- I.B.M. 3830/3333 STRING SWITCHING
- POWER DISTRIBUTION
- MAINTENANCE
- SIMULTANEOUS OPERATION
- RELIABILITY
COMPARISON

ISS DUAL PORT

IBM STRING SWITCH
FEATUES:

- INDIVIDUAL POWER SUPPLY
- DUAL PORT SWITCH
- ONE SPINDLE PER UNIT
SUBSYSTEM
DIAGNOSTIC /SERVICEABILITY

- 7833 C.E. PANEL

- 7833 OFFLINE DIAGNOSTICS

- D.E.D.U.

- INLINE DIAGNOSTICS

- SUBSYSTEM ONLINE DIAGNOSTICS
  - OS (OLTS)
  - STANDALONE (OLSEP)
# ISS Disk Storage Drives

## Characteristics:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>7330-10/8430</th>
<th>7330-11/8430</th>
<th>7330-12/8430</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage Capacity</strong></td>
<td>100 Million Bytes</td>
<td>200 Million Bytes</td>
<td>317.5 Million Bytes</td>
</tr>
<tr>
<td><strong>Bit Density</strong></td>
<td>4040 BPI</td>
<td>4040 BPI</td>
<td>6060 BPI</td>
</tr>
<tr>
<td><strong>Track Density</strong></td>
<td>192 TPI</td>
<td>370 TPI</td>
<td>400 TPI</td>
</tr>
<tr>
<td><strong>Disk Pack</strong></td>
<td>IBM 3336 OR Equivalent</td>
<td>IBM 3336-11 OR Equivalent</td>
<td>UNIVAC MOD II NOT INTERCHANGEABLE</td>
</tr>
<tr>
<td><strong>Cylinders Per Pack</strong></td>
<td>19 Data Plus 1 Servo Surface</td>
<td>19 Data Plus 1 Servo Surface</td>
<td>19 Data Plus 1 Servo Surface</td>
</tr>
<tr>
<td><strong>Access Time (Nominal)</strong></td>
<td>7 Milliseconds Minimum</td>
<td>5 Milliseconds Minimum</td>
<td>5 Milliseconds Minimum</td>
</tr>
<tr>
<td><strong>Operational (Nominal)</strong></td>
<td>15 Seconds Start/Stop</td>
<td>15 Seconds Start/Stop</td>
<td>15 Seconds Start/Stop</td>
</tr>
<tr>
<td><strong>Disk Rotational Speed</strong></td>
<td>3600 RPM</td>
<td>3600 RPM</td>
<td>3600 RPM</td>
</tr>
<tr>
<td><strong>Number of Recording Heads</strong></td>
<td>19 Airbearing Heads</td>
<td>19 Airbearing Heads</td>
<td>19 Airbearing Heads</td>
</tr>
<tr>
<td><strong>Data Transfer Rate</strong></td>
<td>806 KBS (8 Bits/Byte)</td>
<td>806 KBS (8 Bits/Byte)</td>
<td>1.2 MBS (8 Bits/Byte)</td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td>Temperature 60°F - 90°F</td>
<td>Humidity 20% - 80% RH</td>
<td>Temperature 60°F - 90°F</td>
</tr>
<tr>
<td><strong>Physical Dimensions</strong></td>
<td>SINGLE SPINDLE: PACK LOADING HEIGHT 36&quot;</td>
<td>SINGLE SPINDLE: PACK LOADING HEIGHT 36&quot;</td>
<td>SINGLE SPINDLE: PACK LOADING HEIGHT 36&quot;</td>
</tr>
<tr>
<td></td>
<td>HEIGHT 40&quot;</td>
<td>HEIGHT 40&quot;</td>
<td>HEIGHT 40&quot;</td>
</tr>
<tr>
<td></td>
<td>WIDTH 20&quot; **</td>
<td>WIDTH 20&quot; **</td>
<td>WIDTH 20&quot; **</td>
</tr>
<tr>
<td></td>
<td>DEPTH 34&quot;</td>
<td>DEPTH 34&quot;</td>
<td>DEPTH 34&quot;</td>
</tr>
<tr>
<td></td>
<td>WEIGHT 500 LBS.</td>
<td>WEIGHT 500 LBS.</td>
<td>WEIGHT 500 LBS.</td>
</tr>
</tbody>
</table>

*Moveable to another on-site machine
**Plus 1" per required side panel
KEY 7330-11 ADVANTAGES

- EXTREMELY HIGH RELIABILITY HAS BEEN A FUNDAMENTAL DESIGN PRIORITY
- EASY ACCESS TO ALL SUBASSEMBLIES KEEPS SERVICE COSTS LOW
- EXTREMELY FAST AND PRECISE HEAD POSITIONING INCREASES SYSTEM PERFORMANCE
- ADVANCED AIR SYSTEM ACHIEVES EXCEPTIONALLY LOW PARTICLE COUNT, STABLE THERMAL CONDITIONS AND VERY QUIET OPERATION
- LOW FLYING HEIGHT ACHIEVES SUPERIOR TRACK RESOLUTION
- COMPACT DESIGN AND SINGLE-SPINDLE PACKAGING REQUIRE MINIMUM AMOUNT OF FLOOR SPACE
7330-11 DESIGN STRENGTH

- 100 MB VERSION (7330-10) INTERCHANGES PACKS WITH 7330

- 7330-10 IS EASILY UPGRADED TO 7330-11 IN FIELD, REQUIRES LESS THAN 4 HOURS INCLUDING CHECKOUT

- FIELD KIT INCLUDES

  19 DATA HEAD ASSEMBLIES
  1 SERVO HEAD ASSEMBLY
  12 PCB UPDATES
  1 UPPER SPINDLE LOCKING SHAFT
  1 CAM
  1 MODULE SELECT PLUG
7330-11 DESIGN STRENGTHS

- READ/WRITE
  - DATA ERROR RATE 2 TO 3 TIMES LOWER THAN IBM 3330-11 ON INDEPENDENT MEDIA
  - DATA ERROR RATE 6 TIMES LOWER THAN 7330
  - HEAD OUTPUT INCREASED 30% VIA:
    - DOMAIN ORIENTED MEDIA
    - BIFILAR WOUND HEAD
    - 35 MICROINCH FLYING HEIGHT
  - SIGNAL TO NOISE RATIO INCREASED THROUGH CIRCUITRY CHANGES AND HARDWARE IMPROVEMENTS
HEAD ALIGNMENT

- ACCURACY HAS BEEN IMPROVED
- MECHANICAL DESIGN PROVIDES BETTER ACCESS TO HEADS
- RUGGED, LOW-COST PLUG-IN UNIT SUPERSEDES DEDU FOR HEAD ALIGNMENT
- MECHANICAL TOOLS REDUCED FROM TWO TO ONE
7330-11 DESIGN STRENGTHS

• AIR SYSTEM

- 7330 HAS LOWEST PARTICLE COUNT AMONG INDEPENDENTS

- 7330-11 LEADS THE INDUSTRY BY FURTHER REDUCING PARTICLE COUNT BY AN ORDER OF MAGNITUDE

- THIS BREAKTHROUGH IN PARTICLE COUNT PERMITS DECREASE OF FLYING HEIGHT FROM 45 MICRO INCH TO 35 MICRO INCH WHILE DECREASING PROBABILITY OF HEAD-TO-DISK INTERFERENCE (HDI)

- LOW FLYING HEIGHT ACHIEVES STRONGER SIGNAL, REDUCED FRINGING AND GREATER STABILITY

- THESE ACHIEVEMENTS RESULT IN REDUCED ERROR RATE AND LESS FREQUENT READ OFFSET

- ACOUSTIC NOISE HAS BEEN GREATLY REDUCED TO BELOW NC-60 CURVE

- THERMAL CHARACTERISTICS ARE CONTROLLED AT LEAST AS WELL AS IBM 3330-11
7330-11 DESIGN STRENGTHS

- SERVO SYSTEM
  - POSITIONING PRECISION HAS BEEN DOUBLED WITHOUT INCREASING ACCESS TIME
  - ELECTRONIC TACH ADJUSTMENTS HAVE BEEN ELIMINATED WHILE IMPROVING ACCURACY
  - MANUFACTURING REPEATABILITY HAS BEEN ACHIEVED ON NEWLY DESIGNED COIL ASSEMBLY
  - CONTINUING SUPERIOR PERFORMANCE IS ASSURED BY FORMAL WORST CASE ANALYSIS
7330-11 DESIGN STRENGTHS

- SERVICEABILITY

- ACCESS TO SERVICEABLE SUBASSEMBLIES HAS BEEN DRAMATICALLY IMPROVED

- POWER DRIVER CHANGED TO SINGLE PLUG-IN ASSEMBLY; POWER TRANSISTORS CAN BE CHANGED WITHOUT DAMAGING PRINTED CIRCUITRY

- HINGED SEQUENCER PANEL PROVIDES QUICK ACCESS TO POWER HANDLING COMPONENTS

- HEADS MUCH MORE ACCESSIBLE FOR ALIGNMENT OR REPLACEMENT

- FILTERS CAN BE CHANGED QUICKLY AND EASILY

- ONLY TWO ELECTRICAL ADJUSTMENTS

- PERIODIC MECHANICAL ADJUSTMENTS NOT REQUIRED
PROJECT OBJECTIVE: TO PROVIDE THE COMPUTER INDUSTRY WITH A MACHINE COMPARABLE TO THE 3350.

ISS MARKETING HAS PROVIDED THE FOLLOWING GUIDELINES:

- CAPACITY COMPETITIVE, APPROXIMATELY 320 MB, NATIVE
- TIME FRAME (6 TO 9 MONTHS DELIVERY AFTER 3350) SEPTEMBER 1976 TO DECEMBER 1976
- FIELD UPGRADE OF TODAYS 7330–11
- PACK INTERCHANGEABILITY NOT DEMANDED. PACK MUST BE MOVABLE AND DATA RECOVERABLE. A DETERIORATED ERROR RATE IS TARGETED AT 1 ERROR IN 10^8 BITS TRANSFERRED
- FIXED HEADS NOT MANDATORY
SUMMARY

- PROVIDES SUPERIOR 100/200/ 317.5 MB PRODUCT

- EXCEPTIONAL RELIABILITY ASSURES LOW SERVICE COST, INFREQUENT INTERRUPTIONS

- ACCURATE HIGH SPEED POSITIONING BOOSTS SYSTEM PERFORMANCE

- SINGLE SPINDLE PACKAGING AND SMALL FOOTPRINT REDUCE FLOOR-SPACE REQUIREMENTS

- QUIET OPERATION WILL PLEASE OPERATIONS PERSONNEL

- 100 MB VERSION IS FIELD UPGRADABLE TO 200 MB AND 200 MB TO 317.5 MB
QUALITY ASSURANCE & TEST OPERATIONS

E. BAHRE
VICE PRESIDENT & GENERAL MANAGER

QUALITY ASSURANCE & TEST OPERATIONS
T. A. DOYLE, JR., DIRECTOR

QUALITY INSPECTION
D. L. MILLER MANAGER

- PLANT CLEARANCE INSPECTION
  D. COSTA
- DRIVE INSPECTION
  L. CARNIATO
- PWA ASSEMBLY INSPECTION
  M. MOORE
- ELECTRO-MECHANICAL INSPECTION
  S. CASELLA
- SUPPLIER QUALITY
  P. JOHNSON
  - SOURCE INSPECTION
    H. VAN DAMME
  - RECEIVING INSPECTION
    C. WILTON

QUALITY ENGINEERING
T. E. MOCK MANAGER

- QUALITY ASSURANCE ENGINEERING
  R. RIDOUT
- SUPPLIER QUALITY ENGINEERING
  W. PORTH
  - RMR
  - N. IRACE
- PRODUCT ASSURANCE & RELIABILITY
  J. FUNDERBURGH
- FAILURE ASSESSMENT ENGINEERING
  J. FUNDERBURGH
- SYSTEMS AUDIT AND STATISTICAL ANALYSIS
  F. GUSDORF

TEST OPERATIONS
E. R. BAILSY MANAGER

- C.E. BOX & CONTROLLER TEST
  AND SPARES TEST
  R. GIESICK
- CALIBRATION AND REPAIR
  O. PERRY
- SYSTEMS TEST
  J. CLANCY
- UNIT TEST
  E. RECOTTA
- TEST ENGINEERING
  S. YOUNG
- BUTTON-UP
  D. CLARK
- REWORK
  D. CLARK
- TEST OPERATIONS
  2ND SHIFT
  R. REYES

JOANNE NEU SECRETARY
ISS is dedicated to continuing product improvements with particular emphasis on reliability.

Periodic reliability feedback has shown that a large sample of 7330's produced in 1974 have reached a stable MTBF of 6,000 hours in six months, well beyond the specification of 3,000 hours.

This same attention to reliability is being applied to all new products.
QUALITY FUNCTIONS

- IMPLEMENT QUALITY CHECKPOINTS THROUGHOUT PROCUREMENT, ASSEMBLY AND TEST PROCESS TO ASSURE COMPLIANCE WITH QUALITY REQUIREMENTS.

- PROVIDE TOP MANAGEMENT AN INDEPENDENT REAL-TIME SCOREBOARD ON QUALITY AND RELIABILITY PERFORMANCE.

- PROMOTE FULL COOPERATION AMONG ALL ISS DEPARTMENTS TO DISCOVER AND REMEDY THE CAUSES OF DEFECTS.

- MAINTAIN POSITIVE QUALITY ENVIRONMENT AT ISS BY ACTION AND AWARENESS PROGRAMS.

- RELIABILITY ENGINEERING FROM DESIGN CONCEPT THROUGH PRODUCT INTRODUCTION TO END-OF-PRODUCT-LIFE.
MAJOR QUALITY PROGRAMS

• COMPONENTS
  - IMPROVED SEMICONDUCTOR QUALITY
  - REPLACE PLASTIC TRANSISTORS WITH METAL CAN TYPES
  - CONTROLS IN THE PREFORM AREA
  - HANDLING AND TESTING OF COMPONENTS
  - VENDOR CONTROLS
  - COMPONENT APPLICATIONS

• PCB
  - HANDLING AND WORKMANSHIP
  - ESTABLISH MAXIMUM REWORK CRITERIA
  - IMPROVED TESTING, USING THE FAULT FINDER AND GR TESTER
  - NEW INLINE CLEANER
  - CONTROL OF BARE BOARDS
  - AUTOMATIC INSERTION
MAJOR QUALITY PROGRAMS

• SYSTEMS TEST
  - TESTING AT ELEVATED TEMPERATURE
  - INCREASED TEST TIME
  - RETEST PROCEDURE
  - VERIFICATION

• FAILURE ANALYSIS
  - EVALUATE IN-PROCESS FAILURES
  - RESPONSE TO CUSTOMER REQUESTS FOR ANALYSIS
FLOW CHART OF DRIVES THROUGH TEST

INCOMING DRIVES
BLDG. 1

UNIT TEST
1. DEBUG
2. INLINES
(1 HR)

UNIT TEST
48 HOUR SOAK AT 95°F
(8 HRS)

UNIT TEST
ROBOT TESTS
(12 HRS)

UNIT TEST
GATE CONFIGURATION AND SEAL
(1/2 HR)

INSPECTION
1. PRELIMINARY
2. ALL INTERNAL PARTS.
(1 HR)

SYSTEMS TEST
1. INLINES
2. SYSTEMS
3. HOT BOX
4. ON LINE TESTS
5. HEAD INSPECTION
(12 HRS)

BUTTON-UP
1. COVERS
2. COSMETICS
(1-1/2 HRS)

INSPECTION
VERIFICATION
(1 HR)

SYSTEMS TEST
COSMETICS
(1 HR)

FINAL INSPECTION
(1/2 HR)

FINISHED GOODS

1/19/76
CUSTOMER SERVICE
AND
SUPPORT
CUSTOMER SERVICE AND SUPPORT

VICE PRESIDENT
AND
GENERAL MANAGER

MARKETING
AND
PLANNING

MARKETING
ADMINISTRATION

SPARES
ADMINISTRATION

SYSTEMS
ASSURANCE

PRODUCT
DEVELOPMENT

CUSTOMER
TECHNICAL
SUPPORT

QUALITY AND
RELIABILITY
ENGINEERING

EQUIPMENT
ADMINISTRATION

TRAINING

DOCUMENTATION

TECHNICAL
SUPPORT

FIELD REPORTING
AND
FAILURE ANALYSIS
ISS
SPERRY + UNIVAC

SUMMARY

- GUARANTEES DEPENDABLE SOURCE OF SUPPLY
  - ISS HAS VERY STRONG FINANCIAL RESOURCES
  - TECHNICAL CAPABILITY IS SECOND TO NONE
  - HIGH-VOLUME PRODUCTION CAPABILITY IS IN PLACE
  - ISS IS THE MARKET LEADER