



**NC: Management's Key
To The 70's**

7th

**Annual Meeting
and Technical Conference
of the**

NUMERICAL CONTROL SOCIETY

APRIL 8, 9, AND 10, 1970
AT THE
STATLER - HILTON HOTEL
BOSTON, MASS.

REGISTRATION

7:30 to 9:30 p.m., Tuesday, April 7
8:00 to 9:00 a.m., Wednesday, April 8

- Registration and all technical sessions will be held on the mezzanine.
- Product exhibits and literature displays on the fourth floor.

**CONFERENCE HOST
YANKEE CHAPTER NCS**

Lawrence D. Levine,
Conference Chairman

Peter Senkiw,
National Meeting Coordinator

CHAIRMEN

George Schwenk, Program
Howard Abbot, Facilities
Bernard Miller, Publicity
Norman Koss, Banquet

Ara Aykanian, Finance
George E. Davidson, Literature
& Product Displays
John Dockstader, Tours

Ed Wahlstrom, Equipment

Wednesday, April 8

SESSION ONE 9:00 to 10:30 a.m.

8:00 - 9:00 Registration

BALLROOM EAST

9:00 CALL TO ORDER

LAWRENCE D. LEVINE, Manager, Advanced Engineering, Hitchiner Manufacturing Co., Inc.

WELCOME

RICHARD JERUE, President, NCS
Vice President, DeVlieg Machine Tool Corp.

ANNOUNCEMENTS

1 NC: Management's Key to the 70's

Moderator: Allen E. Hermanson, General Manager
Sundstrand Machine Tool Division

9:15 A Production Management Preview of the '70's

WICKHAM SKINNER, Professor of Business Administration
Harvard University, Graduate School of
Business Administration

NC is A Business Tool

RALPH P. RISCH, Director of Planning
Control Data Corp., Omaha Division

10:15 Questions and Answers

10:30 Break

SESSIONS 2A and 2B and 2C concurrent 10:45 a.m. to Noon

BALLROOM WEST

2A Which Servo for You?

Moderator: Ara Aykanian, Vice Pres. Boston Digital Corp.

10:45 NC Systems Driven by Electro-hydraulic Pulse Motors

SEIUEMON INABA, Manager of Computing
Control Engineering Dept. Fujitsu Ltd., Japan
Presented by: Jerry Fry, General Sales Manager
Yamazaki Machinery Corp.

Electrohydraulic Cylinder Drives—A
Re-evaluation

R. BELL, SR., Lecturer in Mechanical Eng'g;
The University of Manchester Institute of
Science & Technology, England

Presented by: Thomas Shipley, Sales Mgr.
Monarch Machine Tool Co.

Applying Electric Servos & Steppers to NC
JACK THOMAS, Sales Manager

11:45 Questions & Answers

GEORGIAN ROOM

2B Total Manufacturing Software

Moderator: Howard Abbott, Staff Engineer
Arthur D. Little Inc.

10:45 A "Process Planning Language & Scheduling
System For an NC Complex"

GEORGE P. PUTNAM, Mgr. Symbolic Control Research
IIT Research Institute

EXAPT — A Technology-Oriented NC Language
D. RECKZIEGEL, Dr. Ing.

EXAPT—Association, West Germany

CUTS — Turret Lathe Programming the Easy Way
RICHARD D. ERICKSON, Staff Mgr.—NC

Turning Machines
The Warner & Swasey Co.

11:45 Questions & Answers

Parlor "B" — 2C Principles of Numerical Control I

10:45 (A Capsule Tutorial—Special Workshop by prior registration only)

JAMES J. CHILDS, President
James J. Childs Associates

Noon LUNCH (BALLROOM EAST)

SESSIONS 3A and 3B and 3C concurrent 1:30 to 3:15 p.m.

BALLROOM WEST

3A Direct Computer Numerical Control (DNC) 1

Moderator: Richard Morley, Pres. Bedford Associates, Inc.

1:30 Design Features of A Hierarchic Numerical Control System

JAMES D. BARBER, Supervisor, NC Software
JEROME PRICE

The Bendix Corp., Industrial Controls Division

A Software Interpolation Scheme for

Direct Numerical Control

DONALD WORTZMAN, Project Manager

IBM, Advanced Systems Development Division

Computerized Numerical Control System

AL MARSTON, Section Manager

Hewlett Packard, Cupertino Division

Economic Considerations in Computer Control
of NC Equipment

WALTER A. HUBBARD, Staff System Planner

IBM, Advanced Systems Development Division

3:00 Questions & Answers

GEORGIAN ROOM

3B APT and "Sub-APT" For the Smaller Computer

Moderator: Dr. Shizuo Hori, Sr. Science Advisor, IITRI

1:30 A Status Report On Postprocessors For the Seventies

DOUGLAS A. ACKLEY, Sr. Computer Programmer
The Bendix Corp., Industrial Controls Division

UNIAPT — APT On The PDP-8

JOHN H. WRIGHT, President

United Computing Corporation

A New APT Compiler For the Small Computer

CHARLES J. KOTSAFTIS, Marketing Manager

Fordax Corp.

Status of ADAPT As An NC Programming Language

JOSEPH ALBERT, Mgr., Computer Applications

Operation

The General Electric Company

3:00 Questions & Answers

Parlor "B" — 3C Principles of Numerical Control II

1:30 (A Capsule Tutorial — by prior registration only)

JAMES J. CHILDS, President
James J. Childs Associates

3:15 Break

BALLROOM WEST

4A Getting the Most From NC

Moderator: William Constantine, Pres. Gurnard Mfg. Co.

- 3:30 Cutting Tool Coding—The Key to Complete NC**
CARL NATONI, Perishable Tool Engineer
Solar, Division of International Harvester Co.
Optimized Productivity of NC Equipment
DONALD W. SAVAGE, Senior Engineer Western Electric
Computerized Monitoring In An NC Shop
MIKE SHULMAN, Equipment Engineering Mgr.
Rohr Corporation

4:45 Questions & Answers

PARLOR A

4B Solving The Training Problem

Moderator: John Dockstader, Productivity Training Coordinator
Hewlett Packard Corp.

- 3:30 Training For NC Survival**
HOWARD R. HULL, Training Director
NC Sciences
Educational TV—The Hot New Training Medium For NC
HARLEY L. MUDGE, JR., Mechanical Engineer
North Carolina State University, Industrial Extension
Service

4:45 Questions & Answers

GEORGIAN ROOM

4C Machine Accuracy and Work Measurement

Moderator: Arthur Sloan, Mgr. Application Engr.
Potter Instrument Co.

- 3:30 Automated Inspection By Pattern Recognition**
R. M. CENTNER, Mgr., Control & Data-
Handling Systems Dept.
E. D. HIETNEN
The Bendix Corp., Research Laboratories Div.

- Thermal Stability: Key To NC Accuracy
E. R. McCLURE, Ph.D., Mechanical Engr.
J. B. BRYAN, Mechanical Engr.
University of California, Lawrence Radiation Laboratory
Advanced Techniques for Gaging Discrete Components
GERALD FRANCK, Application Engineer
The Bendix Corp., Automation & Measurement Div.

4:45 Questions & Answers

5:00 ANNUAL BUSINESS MEETING, NCS—BAY STATE ROOM

Thursday, April 9

SESSION 5 8:00 to 9:45 a.m.

BALLROOM EAST

5 Computer Supported Manufacturing Systems

Moderator: Douglas Cassell, Tech. Director
Computer Guild Inc.

- 8:00 An Operational Engineering-Manufacturing Control System**
M. JENSEN, Mgr.—Computer Applications
Pratt & Whitney Machine Tool Division, Colt Industries
Utilization Of NC In Shipbuilding
PER WHITE
Systems, Science and Software

- Computer Controlled Grinding Machines
JOSEPH NITKIEWICZ, Chief R&D Engineer
ARTHUR J. WALICKI, Supervisor, Computer
Programming, Ex-Cell-O Corp., Machine Tool Division
Ex-Cell-O Corp., Machine Tool Division
Computer Controlled Automatic Material Handling
IRA NAGIN, Senior Engineer
Aerojet-General Corp., Industrial Systems Division

9:30 Questions & Answers

9:45 Break

SESSION 6A and 6B - concurrent 10:00 to 11:30 a.m.

BALLROOM WEST

6A Direct Computer Numerical Control (DNC) II

Moderator: Norman Doelling, Pres.
Machine Control Corp.

- 10:00 DNC Using Small Computers**
RUSSELL C. DOANE, NC Product Line Manager
Digital Equipment Corp.
Computers and Numerical Control: A Shotgun Marriage?
E. R. REESE, Vice President & General Manager
Digital Systems, Inc.
Mini Computer Approach To Direct Computer Control
JOHN DEAM
The Warner & Swasey Company

11:15 Questions & Answers

GEORGIAN ROOM

6B Family Of Parts Programming

Moderator: Miss Marlene Strukel, Supv. Software Dev.
Bendix Industrial Controls Div.

- 10:00 A Variable Dimensioned Automatic Machine Programming Language**
PAUL R. ST. CLAIR, JR., Systems Engr.
LAWRENCE S. POWELL, Systems Engr.
Westinghouse Information Systems
Instant Special Purpose Machines Through Software Change
WALTER N. KOE, President
Wenko Associates, Inc.
Family Programming
CHESTER HAYNER, JR., Sr. Engineer
General Electric Co., Machining Development Operation

11:15 Questions & Answers

11:30 LUNCH—BALLROOM EAST

12:30 TOURS See enclosed schedule

5:00 BOARD OF DIRECTORS MEETING — PARLOR "E"

6:00 COCKTAIL HOUR —

7:00 BANQUET — GRAND BALLROOM

DINNER

JACQUARD AWARDS — Dr. Joseph Harrington, Jr., Presenter

SPEAKER — Dr. Louis B. Rader — Numerical Control and the '70's

