

SHIP PRODUCTION COMMITTEE
FACILITIES AND ENVIRONMENTAL EFFECTS
SURFACE PREPARATION AND COATINGS
DESIGN/PRODUCTION INTEGRATION
HUMAN RESOURCE INNOVATION
MARINE INDUSTRY STANDARDS
WELDING
INDUSTRIAL ENGINEERING
EDUCATION AND TRAINING

June 1977
NSRP 0003

THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Proceedings of the REAPS Technical Symposium

Paper No. 17: Users Experience with REAPS Simplified ALKON

U.S. DEPARTMENT OF THE NAVY
CARDEROCK DIVISION,
NAVAL SURFACE WARFARE CENTER

Report Documentation Page

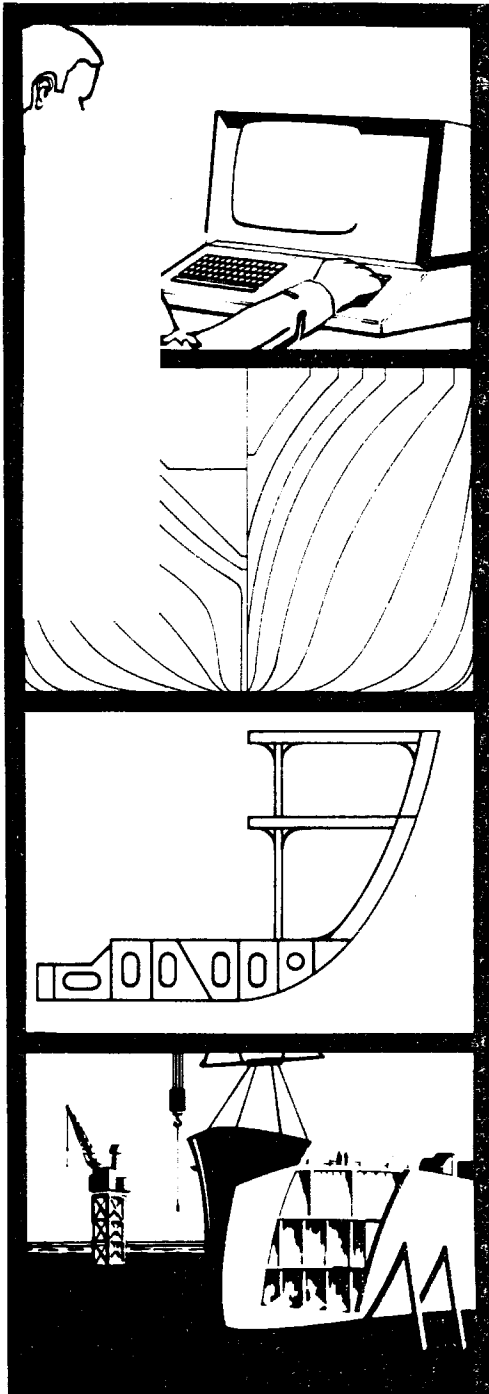
Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE JUN 1977	2. REPORT TYPE N/A	3. DATES COVERED -	
4. TITLE AND SUBTITLE The National Shipbuilding Research Program: Proceedings of the REAPS Technical Symposium Paper No. 17: Users Experience With REAPS Simplified ALKON		5a. CONTRACT NUMBER	
		5b. GRANT NUMBER	
		5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)		5d. PROJECT NUMBER	
		5e. TASK NUMBER	
		5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Surface Warfare Center CD Code 2230 - Design Integration Tools Building 192, Room 128 9500 MacArthur Blvd Bethesda, MD 20817-5700		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited			
13. SUPPLEMENTARY NOTES			
14. ABSTRACT			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	
19a. NAME OF RESPONSIBLE PERSON			

DISCLAIMER

These reports were prepared as an account of government-sponsored work. Neither the United States, nor the United States Navy, nor any person acting on behalf of the United States Navy (A) makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness or usefulness of the information contained in this report/manual, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or (B) assumes any liabilities with respect to the use of or for damages resulting from the use of any information, apparatus, method, or process disclosed in the report. As used in the above, "Persons acting on behalf of the United States Navy" includes any employee, contractor, or subcontractor to the contractor of the United States Navy to the extent that such employee, contractor, or subcontractor to the contractor prepares, handles, or distributes, or provides access to any information pursuant to his employment or contract or subcontract to the contractor with the United States Navy. ANY POSSIBLE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR PURPOSE ARE SPECIFICALLY DISCLAIMED.



R ESEARCH
E AND
NGINEERING
FOR
AUTOMATION
AND
PRODUCTIVITY
IN
SHIPBUILDING

**Proceedings of the
REAPS Technical Symposium
June 21-22, 1977
New Orleans, Louisiana**

USER EXPERIENCE WITH REAPS SIMPLIFIED ALKON

Bernard J. Breen
General Dynamics Corporation
Eastern Data Systems Center
Groton, Connecticut

As Management Systems Specialist, Mr. Breen is responsible for all the Data Center supported CAD/CAM activities of General Dynamics' Shipyard divisions. He has been responsible for AUTOKON and related software since the system was first installed in North America in 1968 at General Dynamics.

Mr. Breen has a B.S. degree in Mathematics and Computer Sciences from Purdue University.

1. WHAT IS ALKON?

A PARTS GENERATION SOFTWARE SYSTEM

- AUTOKON 1: PARTS GENERATION
- AUTOKON '71/'76: ALKON
- REAPS: SIMPLIFIED ALKON

GENERAL DYNAMICS

3. WHAT IS SIMPLIFIED ALKON?

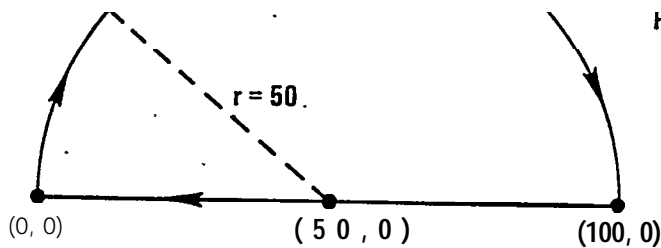
- AUTOKON '71 ALKON

- AUTOKON 1 PARTS GENERATION BY SOFTWARE ENHANCEMENTS TO AUTOKON '71 BY INCLUSION OF SPECIALIZED NORMS

GENERAL DYNAMICS

2. SPT (+0+0)

CIR: CNT(+50+0)
 RAD (-50) EPT (+100+0)
 SL: EPT (+0+0)



GENERAL DYNAMICS

4.

SIMPLIFIED ALKON

A METHOD OF OFFERING A RELATIVELY SIMPLE PARTS GENERATION LANGUAGE FOR N/C FLAME CUTTING DEMANDS WHILE SIMULTANEOUSLY ALLOWING A SOPHISTICATED LANGUAGE FOR DESIGN AND ADVANCED MANUFACTURING REQUIREMENTS

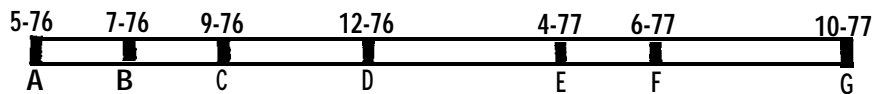
GENERAL DYNAMICS

HOW HAS SIMPLIFIED ALKON BEEN DEVELOPED?

- APPROVED AS A REAPS DISCRETIONARY DEVELOPMENT PROJECT IN 1976
- JOINT EFFORT BETWEEN IIT RESEARCH INSTITUTE AND GENERAL DYNAMICS CORP.

GENERAL DYNAMICS

IMPLEMENTATION SCHEDULE



- A: PRELIMINARY SPECIFICATIONS
- B: REAPS PARTICIPANTS' COMMENTS
- C: REVISED SPECIFICATIONS
- D: DISTRIBUTION OF BX2
- E: REVISED REQUIREMENTS
- F: DISTRIBUTION OF BX3
- G: DISTRIBUTION OF BX4

GENERAL DYNAMICS

WHY SIMPLIFIED ALKON?

- TRAINING
- TURN-AROUND
- ADDITIONAL CAPABILITIES
- SOFTWARE MAINTENANCE AND MODIFICATIONS
- COMPUTER MAINFRAME FACETS

GENERAL DYNAMICS

TRAINING

AUTOKON '71 ALKON

- BASIC - 6 WEEKS AT 20 HOURS/WEEK
DOES NOT ALLOW FULL CAPABILITY NORM CODER
- ADVANCED - 4 WEEKS AT 20 HOURS/WEEK
INCLUDES CONCEPTS SUCH AS WIRE MODELS,
GOES BEYOND CAPABILITIES OF AUTOKON 1,
ALLOWS NORM CODING PENDING USER

AUTOKON 1 PARTS GENERATION

- 2 WEEKS AT 20 HOURS/WEEK
FULL PRODUCTION CODER
ALLOWS NORM CODING PENDING USER
CAN BE LEARNED BY "HAMMER AND NAIL" LOFTSMEN

GENERAL DYNAMICS

TURN-AROUND

NUMBER OF JOB SUBMISSIONS REQUIRED
PER SUCCESSFUL MANUSCRIPT

- AUTOKON '71 ALKON: 3-5 SUBMISSIONS
- AUTOKON 1 PARTS: 2-4 SUBMISSIONS

GENERAL DYNAMICS

ADDITIONAL CAPABILITIES

ALL AUTOKON '71 ALKON FACETS
ARE AVAILABLE TO THE AUTOKON 1
PARTS GENERATION CODER

GENERAL DYNAMICS

SOFTWARE MAINTENANCE AND MODIFICATIONS

- AUTOKON '71 ALKON:
 - THREE-PASS SYSTEM
 - A DATA BASE RECORD INCLUDES ALL RELATED MATRIX DATA
 - REAPS/IIT RESEARCH INSTITUTE SUPPORTED
- AUTOKON 1 PARTS GENERATION:
 - SIX-PASS SYSTEM
 - A DATA BASE RECORD IS COMPRISED OF A SINGLE GEOMETRIC CONTOUR

GENERAL DYNAMICS

COMPUTER MAINFRAME FACETS:

FACET	AUTOKON 1 PARTS	AUTOKON'71 ALKON	SIMPLIFIED ALKON
MEMORY	64K WDS	49K WDS	53K WDS
MASS STORAGE	2.2 MIL. WDS	1.7 MIL. WDS	1.7 MIL. WDS
CPU TIME:			
1 PART	13.6 SEC	4.6 SEC	4.8 SEC
5 PARTS	27.4 SEC	18.3 SEC	22.1 SEC
20 PARTS	81.6 SEC	60.6 SEC	75.3 SEC

292

GENERAL DYNAMICS

Additional copies of this report can be obtained from the
National Shipbuilding Research and Documentation Center:

<http://www.nsnet.com/docctr/>

Documentation Center
The University of Michigan
Transportation Research Institute
Marine Systems Division
2901 Baxter Road
Ann Arbor, MI 48109-2150

Phone: 734-763-2465
Fax: 734-763-4862
E-mail: Doc.Center@umich.edu