Date: 11/20/80

Project Title: Steady-State Finite-Dimensional Discrete-Time Stochastic Control

Project No.: E-24-618

Project Director: Dr. L. K. Platzman

Sponsor: National Science Foundation; Washington, D.C. 20550

Agreement Period: From 8/15/80 Until 4/30/82
(Includes usual six (6) month unfunded flexibility period)

Type Agreement: Grant No. ECS-8020687

Amount: $16,641 NSF
3,243 GIT (E-24-343)
$19,884 TOTAL

Reports Required: Annual Progress Report; Final Project Report

Sponsor Contact Person(s):

Technical Matters

Mr. Abraham H. Haddad
NSF Program Officer
Systems Theory and Operations Research
Division of Electrical, Computer, and
Systems Engineering
Directorate for Engineering and Applied Science

National Science Foundation
Washington, D.C. 20550
202/357-9618

Contractual Matters

(thru OCA)

Mr. William A. Bryant
NSF Grants Official
Section II
AAEO/EAS Branch
Division of Grants and Contracts
Directorate for Administration
National Science Foundation
Washington, D.C. 20550
202/357-9602

Defense Priority Rating: None

Assigned to: Industrial and Systems Engineering (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director—EES
Accounting Office
Procurement Office
Security Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
EES Reports & Procedures
Project File (OCA)
Project Code (GTRI)
Other OCA Research Property Coordinator
SPONSORED PROJECT TERMINATION SHEET

Date: 6/29/83

Project Title: Steady-State Finite-Dimensional Discrete-Time Stochastic Control

Project No: E-24-618

Project Director: Dr. Loren K. Platzman

Sponsor: National Science Foundation

Effective Termination Date: 4/30/82

Clearance of Accounting Charges: 4/30/82

Grant/Contract Closeout Actions Remaining:

- [ ] Final Invoice and Closing Documents
- [ ] Accounting
- [X] Final Fiscal Report (FCTR)
- [X] Final Report of Inventions
- [X] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other ____________________________

Assigned to: Industrial Systems Engineering (School of Electrical Engineering)

COPIES TO:

Administrative Coordinator
Research Property Management
Accounting
Procurement/EES Supply Services

Research Security Services
Reports Coordinator (OCA)
Legal Services (OCA)
Library

EES Public Relations (2)
Computer Input
Project File
Other ____________________________ Platzman
**PART I—PROJECT IDENTIFICATION INFORMATION**

1. **Institution and Address**
   - Georgia Institute of Technology
   - Atlanta, GA 30332

2. **NSF Program**
   - Systems Theory and O.R.

3. **NSF Award Number**
   - ECS 8020687

4. **Award Period**
   - From 8/15/80 to 4/30/82

5. **Cumulative Award Amount**
   - 16,641

6. **Project Title**
   - Steady-State Finite-Dimensional-Discrete-Time Stochastic Control

**PART II—SUMMARY OF COMPLETED PROJECT (FOR PUBLIC USE)**

Stochastic control theory is now routinely used to regulate aircraft, chemical processes, and other continuous-state man-made systems. Discrete-state problems have not enjoyed the same success. These problems include:

- Dynamic routing systems (automated warehouses and product distribution, communication networks)
- Repair and replacement systems
- Quality control sampling strategies
- Emergency vehicle dispatching

This research is an essential first step to obtaining practical algorithms for such problems. We have obtained two important results: (1) a fast algorithm to solve partially-observed Markov decision problems by finite-element approximations, and (2) identification of a class of well-structured problems that include the well-known continuous-state problems as well as the new discrete-state problems that are of more current interest.

**PART III—TECHNICAL INFORMATION (FOR PROGRAM MANAGEMENT USES)**

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<th>ITEM (Check appropriate blocks)</th>
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<td>c. Data on Scientific Collaborators</td>
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2. **Principal Investigator/Project Director Name (Typed)**
   - Loren Platzman

3. **Principal Investigator/Project Director Signature**

4. **Date**
   - 5/16/83

NFS Form 98A (5-78) Supersedes All Previous Editions

Form Approved OMB No. 3145-0056
Publication Citations

