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Improved Dry Biological Disseminator (U)

Applied Science Division
Litton Systems, Inc.

TECHNICAL REPORT AFATL-TR-67-61
JUNE 1967

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IMPROVED DRY BIOLOGICAL DISSEMINATOR (U)

Applied Science Division
Litton Systems, Inc.

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FOREWORD


(U) This report was prepared by the Applied Science Division, Litton Systems, Inc., 2003 East Hennepin Avenue, Minneapolis, Minnesota, for the Research and Technology Division, AFATL (ATCB), United States Air Force, Eglin AFB, Florida. Lt. Roger V. Nutter was the Project Officer for this program. This document fulfills the requirements of Item 9 (Final Report) in accordance with Exhibit ASQ 63-2 dated 17 June 1963 under Contract AF 08(635)-4169. The work reported in this document was conducted during the period 19 May 1964 to 27 October 1966.

(U) This technical report has been prepared and marked in accordance with the DOD Industrial Security Manual by the Contractor.

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(U) This report contains no classified material extracted from other classified documents.

(U) Publication of this report does not constitute Air Force Approval of the report's findings or conclusions. It is published only for the exchange and stimulation of ideas.


NICHOLAS H. COX
Colonel USAF
Chief, Bio-Chemical Division

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UNCLASSIFIED ABSTRACT

(U) The purpose of the work undertaken was to provide an improved means of disseminating dry biological agents from high-performance aircraft. A line-source disseminator embodying a new principle of operation was designed following evolution of a design approach. Two disseminators suitable for flight testing were fabricated; they were subjected to laboratory tests and aircraft fit tests. The test results indicate feasibility of the new principle and the design approach, also mechanical and electrical compatibility with the designated aircraft. Outstanding potential attributes of the new disseminator are simplicity, low cost, and a superior ratio of payload to total weight.

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TABLE OF CONTENTS

Section	Title	Page
I	INTRODUCTION	1
II	SUMMARY	2
III	REQUIREMENTS	4
	3.1 Design Requirements and Goals	4
	3.2 Area Coverage Analysis	5
IV	CONFIGURATION AND OPERATION	13
	4.1 General Configuration	13
	4.1.1 Center Section	13
	4.1.2 Nose Section	13
	4.1.3 Tail Section	15
	4.2 Principle of Operation	15
	4.3 Functional Configuration	18
	4.3.1 Storage of High-Pressure Nitrogen	18
	4.3.2 Control of Gas	18
	4.3.3 Electronic and Electrical Timers and Controls	19
	4.4 Operation	19
	4.5 Physical Data	20
V	BASIS FOR APPROACH	24
	5.1 General Background	24
	5.2 Theoretical Basis for Study	25
	5.3 Experimental Investigation	26
	5.3.1 Early Experimental Model	26
	5.3.2 First Feasibility Model	26
	5.3.3 Second Feasibility Model	48
	5.3.4 Third Feasibility Model	62
	5.3.5 Wind Tunnel Tests	94
VI	FINAL DESIGN	101
	6.1 General Design Characteristics	101
	6.1.1 Shell and Structure	101
	6.1.2 Location and Orientation of Major Elements	101
	6.1.3 Cross Section	102
	6.1.4 Distribution of Weight and Center of Gravity	102
	6.1.5 Payload and Payload Ratios	104
	6.1.6 Space Utilization	104

TABLE OF CONTENTS (Cont.)

Section	Title	Page
	6.1.7 Accessibility of Components	105
	6.2 Material, Treatment and Finishes	105
	6.2.1 Static Structural Cast Parts	105
	6.2.2 Static Structural Machined Parts	106
	6.2.3 Static Structural Welded Parts	106
	6.2.4 Formed Skin	106
	6.2.5 Formed Static Structural Parts	106
	6.2.6 Foam	106
	6.2.7 Seals	107
	6.2.8 Non-Structural Parts	107
	6.2.9 Painting	107
	6.3 Fasteners	107
	6.4 Sealing	107
	6.5 Storage Life	108
	6.6 Relationship to, and Compatibility with, Aircraft	108
	6.7 Safety	108
	6.8 Environmental Capabilities	109
	6.9 Design of Disseminating System and System Elements	109
	6.9.1 Disseminating System	109
	6.9.2 Aerator-Supplier	111
	6.9.3 Disseminator-Controller	116
	6.9.4 Pneumatic System	128
	6.9.5 Electrical System	138
	6.10 Shell, Structure and Fins	140
	6.10.1 Shell	140
	6.10.2 Structure	143
	6.10.3 Fins	150
	6.11 Stress Analysis	150
	6.12 Heat Transfer Analysis	152
	6.13 Reliability and Maintainability Estimates	152
	6.13.1 Reliability	152
	6.13.2 Maintainability	153
VII	PREPARATION OF DISSEMINATOR FOR TEST OR FLIGHT	163
	7.1 Filling Disseminator with Powder	163
	7.2 Charging Gas Bottles	165
	7.3 Setting Flow Rate	166

TABLE OF CONTENTS (Cont.)

Section	Title	Page
	7.4 Test Procedure	167
	7.5 Loading Disseminator on Aircraft	168
	7.6 Disseminator Checkout on Aircraft	168
	7.7 Airborne Operation	169
	7.8 Post Flight Checkout	169
	7.9 Notes	170
VIII	PRESHIPMENT TESTS	171
	8.1 Weight Test	171
	8.1.1 Objective	171
	8.1.2 Procedure	171
	8.1.3 Results	171
	8.2 Center of Gravity Tests	171
	8.2.1 Objective	171
	8.2.2 Procedure	171
	8.2.3 Results	171
	8.3 Flow Tests	173
	8.3.1 High Flow with Loose Powder	173
	8.3.2 High Flow with Compacted Powder	173
	8.3.3 Low Flow with Loose Powder	177
	8.3.4 Low Flow with Compacted Powder	177
IX	LOADING EQUIPMENT	178
	9.1 General Description	178
	9.2 Base Assembly	178
	9.3 Superstructure Assembly	178
	9.4 Hydraulic Cylinder and Tilting Piston Assembly	178
	9.5 Hydraulic Pump Assembly	178
X	VALUE ENGINEERING	182
XI	CONCLUSIONS	187
XII	RECOMMENDATIONS	189
	REFERENCES	191

TABLE OF CONTENTS (Cont.)

Section	Title	Page
	APPENDIX I - TEST DATA	193
	APPENDIX II - CANTILEVER BEAM-FLOW INDICATOR	200
	APPENDIX III - PRELIMINARY CENTER OF GRAVITY ANALYSIS	202
	APPENDIX IV - HEAT TRANSFER ANALYSIS OF THE A/B45Y-4	204
	APPENDIX V - GAS REQUIREMENTS - SAMPLE CALCULATIONS	216
	APPENDIX VI - WEIGHT ANALYSIS	217

SECTION I
INTRODUCTION

(U) The work performed for this project was completed by the Applied Science Division of Litton Systems, Inc., under Contract AF 08(635)-4169 with the Air Force Armament Laboratory Center at Eglin Air Force Base, Florida.

(U) The project was started on 19 May 1964.

(U) The general objective of the program was to improve upon means of effectively disseminating dry biological agents from high-performance aircraft with a specific objective of providing hardware for proof of concept for an advanced dissemination technique. The technical starting point for the project was a general configuration embodying a new principle of disseminator operation. The new principle involves the extrusion of aerated, compacted or uncompact agent from a store by utilizing only pneumatic forces and pneumatic control for handling the agent.

(U) The resulting main tasks of the project were:

- 1) To establish a disseminator design through laboratory investigation, through testing of experimental models, and through design and development work.
- 2) To build and test two disseminators to the design of 1) and thereby establish proof of concept.

(U) The new principle of disseminator operation and the application of that principle to low flow rates resulted from experimental work conducted by the Applied Science Division of Litton Systems, Inc.

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APPENDIX II

CANTILEVER BEAM-FLOW INDICATOR

(U) The cantilever beam-flow indicator is shown in Figure II-1. This instrument is used to indicate start and stop of flow only. It is not in any way calibrated to indicate flow rate.

Referring to Figure II-1, the beam consists of an aluminum disc, 3 inches in diameter by 1/8-inch thick, attached to an aluminum bar, 1-inch wide by 1/4-inch thick by approximately 18 inches long. This beam is attached to the supporting frame of the unit to be tested, with the disc positioned under one of the test unit outlet orifices. Attached to the beam, on both of the 1-inch wide sides and approximately 12 inches from the center of the disc, are two single-element strain gauges of the SR-4 type. These elements are connected to form an electrical bridge circuit as shown in Figure II-2. As flow commences, the powder impinges on the disc end of the beam, causing a deflection in the direction of flow. The deflection results in an electrical unbalance in the strain gauge bridge circuit. The unbalance causes a current to flow in the output circuit. This current is amplified and fed into a strip-chart recorder. A careful examination of the strip-chart record can indicate flow pattern and flow consistency as well as flow start and stop time.

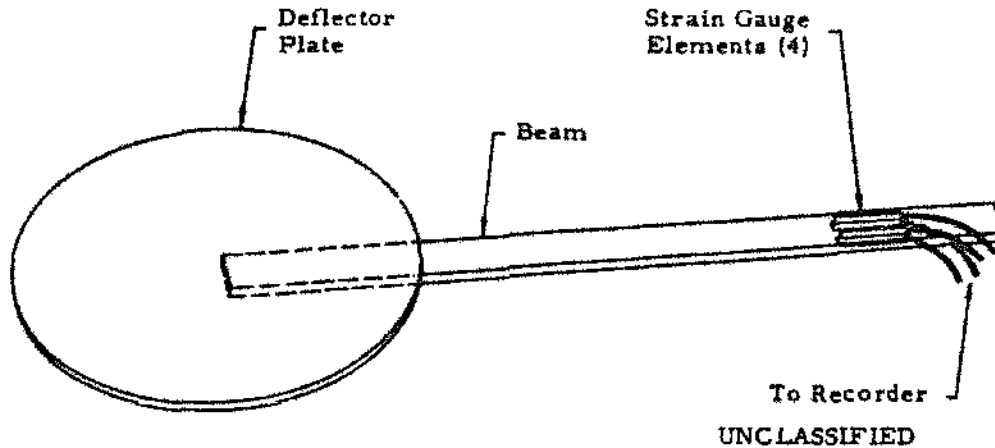


Figure II-1. Cantilever Beam-Flow Indicator (U)

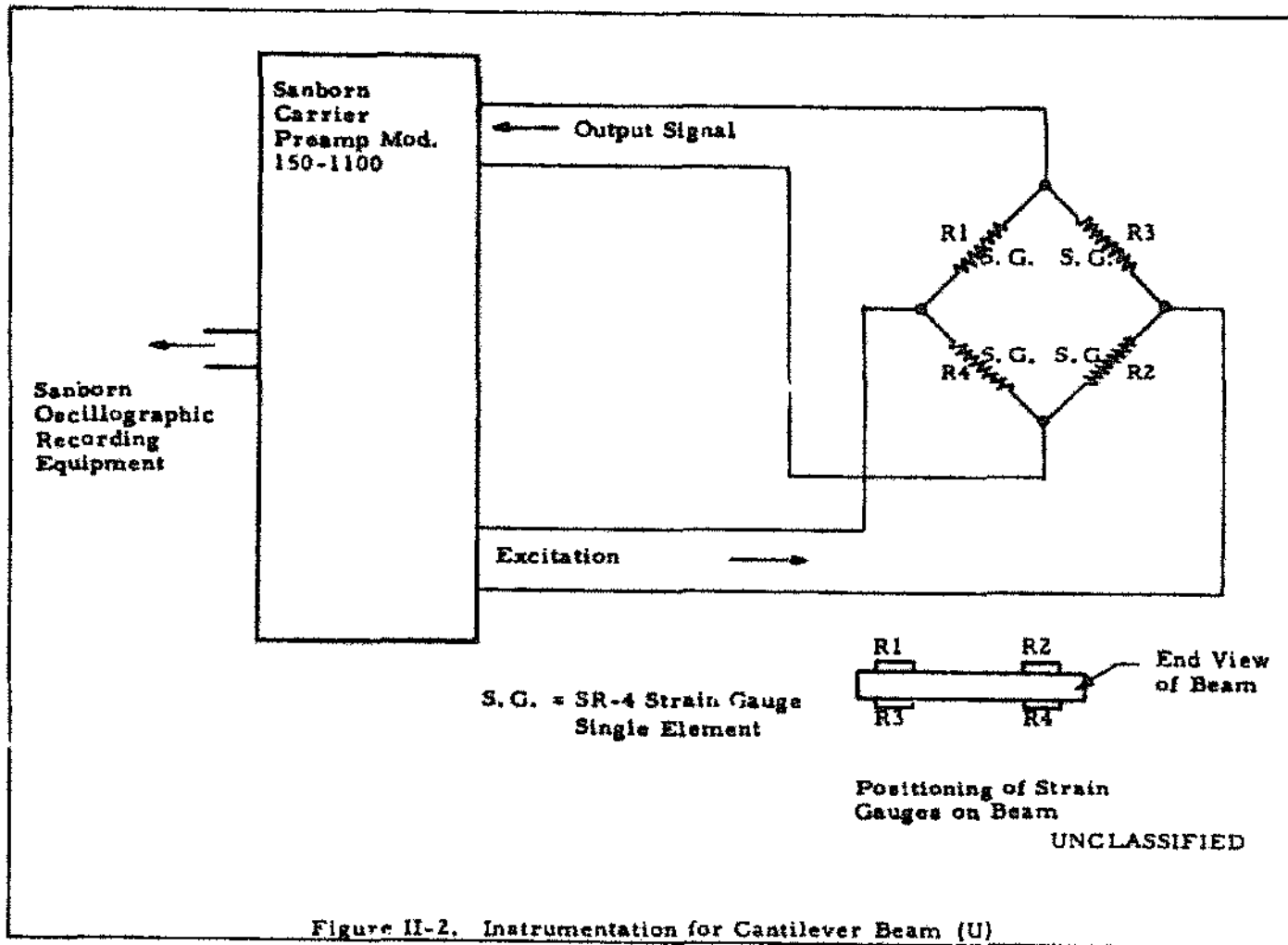


Figure II-2. Instrumentation for Cantilever Beam (U)

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14. KEY WORDS	LINK A		LINK B		LINK C	
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Bacterial aerosols Microorganisms Biological disseminator Disseminator Antipersonnel weapons Biological warfare Airborne external store Spray tank Tank-dispenser, dry agent						

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HEADQUARTERS 96TH TEST WING (AFMC)
EGLIN AIR FORCE BASE FLORIDA

JUN 09 2016

Col Matthew W. Higer, USAF
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96th Test Wing
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Eglin AFB FL 32542

Mr. John Greenewald, Jr.
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Alexandria VA 22314

Dear Mr. Greenewald

This letter is in response to your Freedom of Information Act (FOIA) request, our case #2016-02841-F wherein you requested a copy of the "Improved Dry Biological Disseminator, June 1967, Technical Report AFATL-TR-67-61."

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Sincerely

A handwritten signature in black ink, appearing to read "M. Higer", followed by the word "for" in a smaller font.

MATTHEW W. HIGER, Col, USAF
Vice Commander