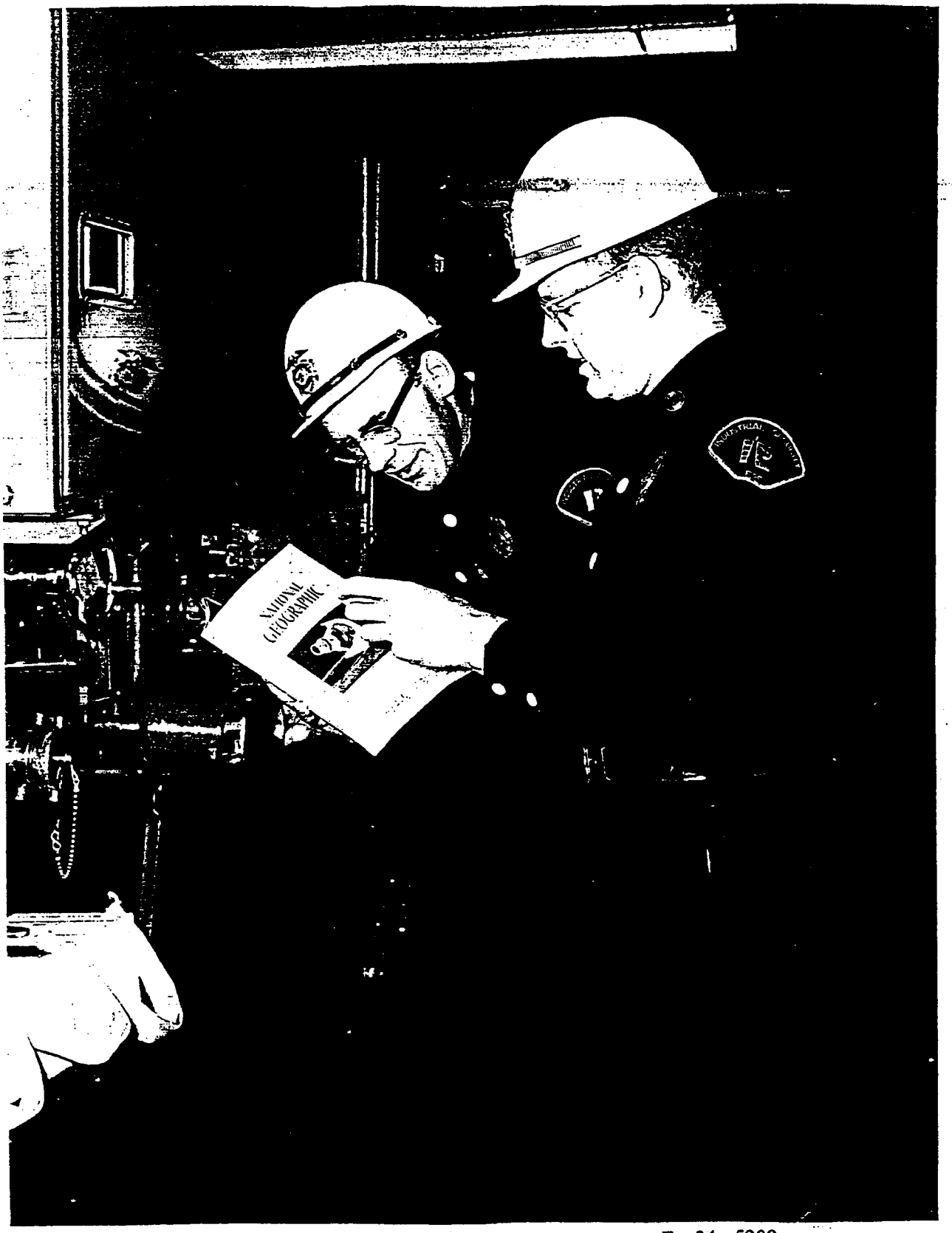

Ex. 34 - 5208

GURICAN
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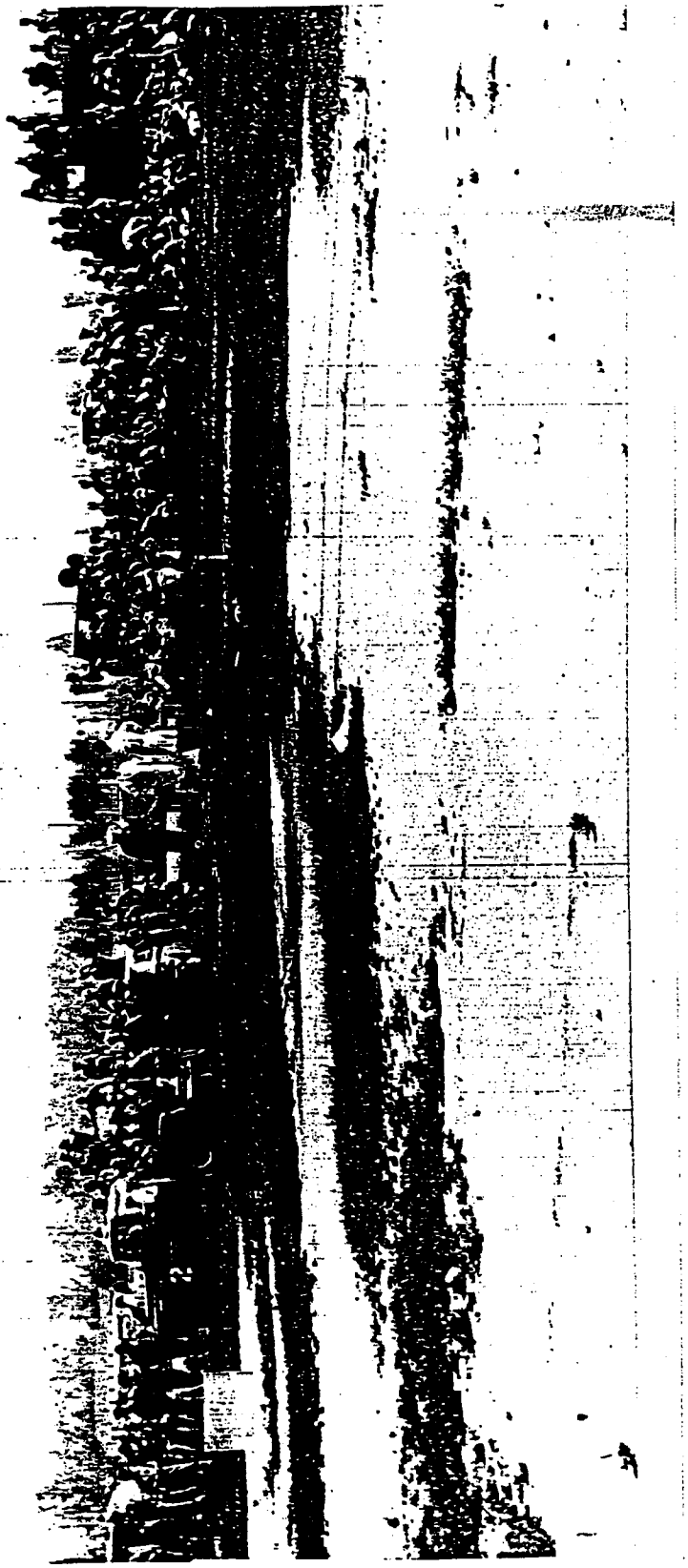

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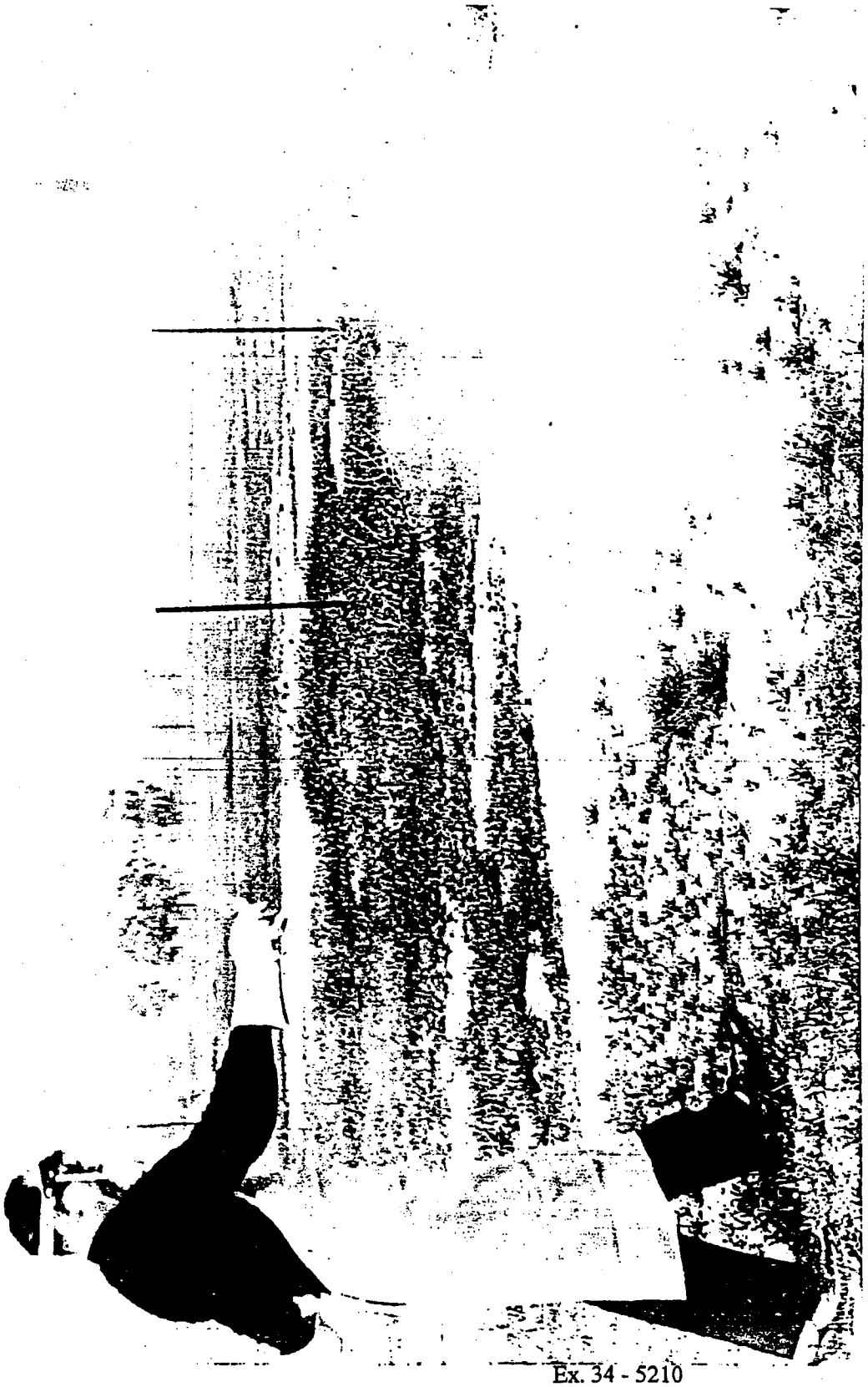

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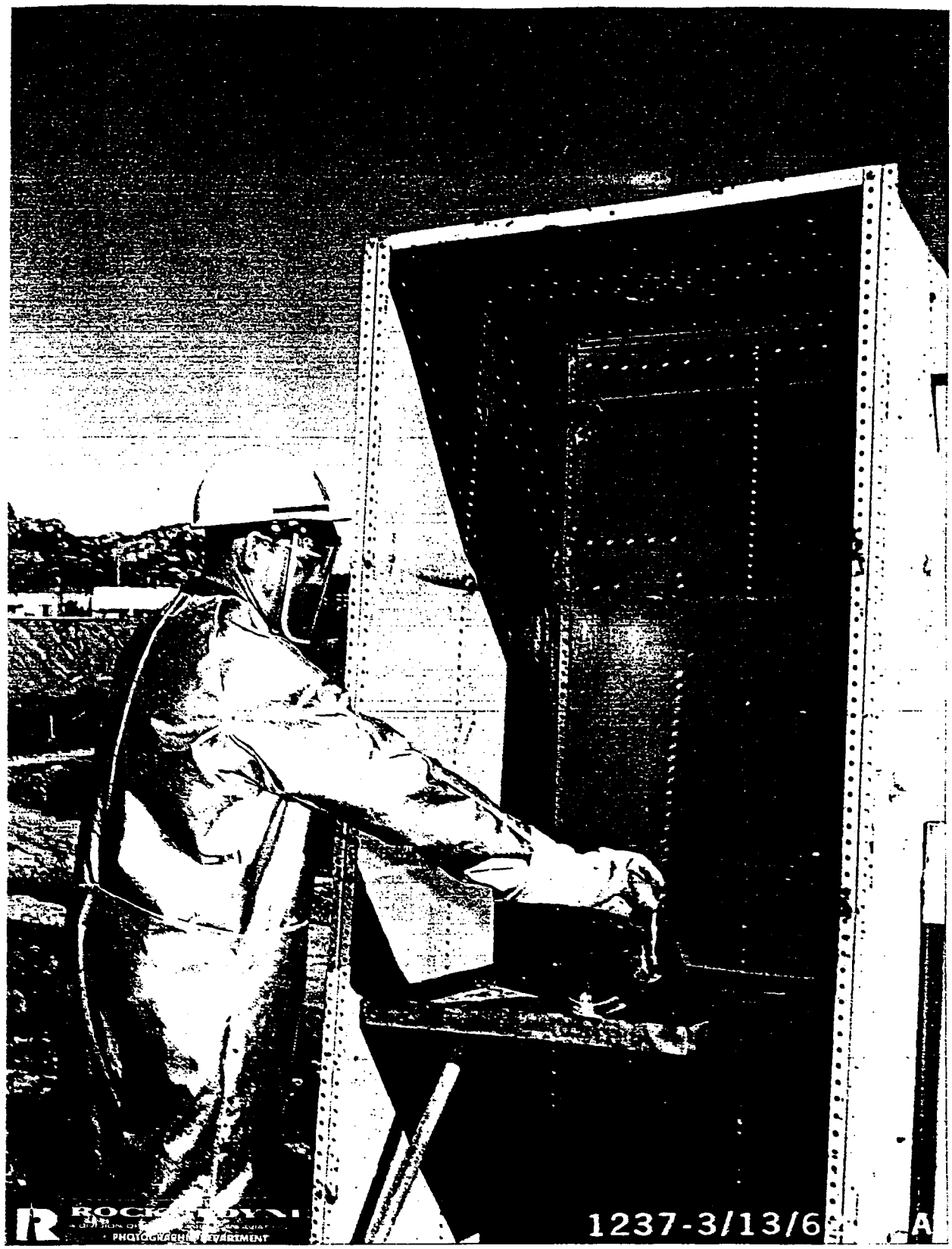

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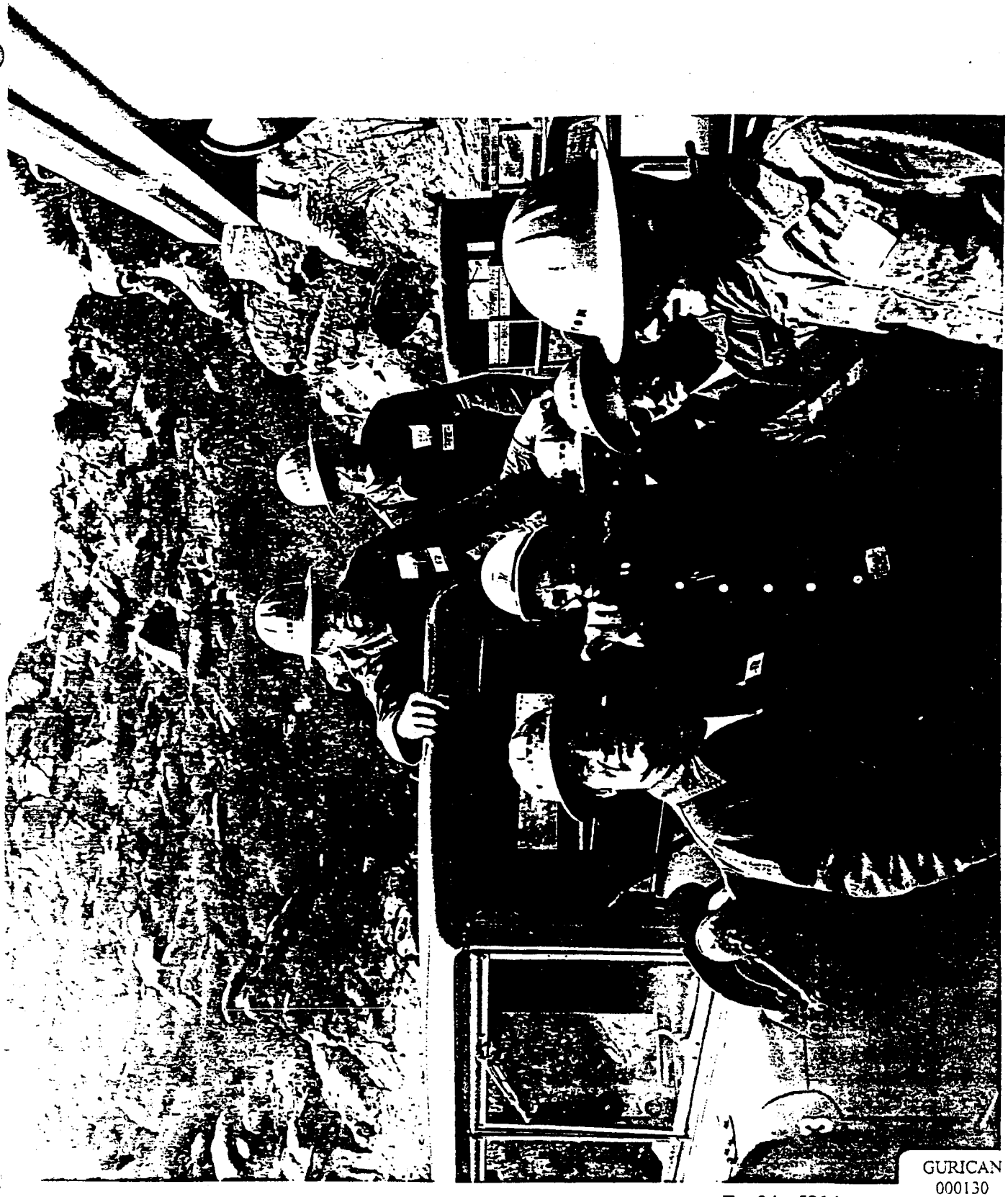
Ex. 34 - 5212

GURICAN
000129

Ex. 34 - 5213



GURICAN
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Ex. 34 - 5214

GURICAN
000131

Ex. 34 - 5215

Ex. 34 - 5216

GURICAN
000132

GURICAN
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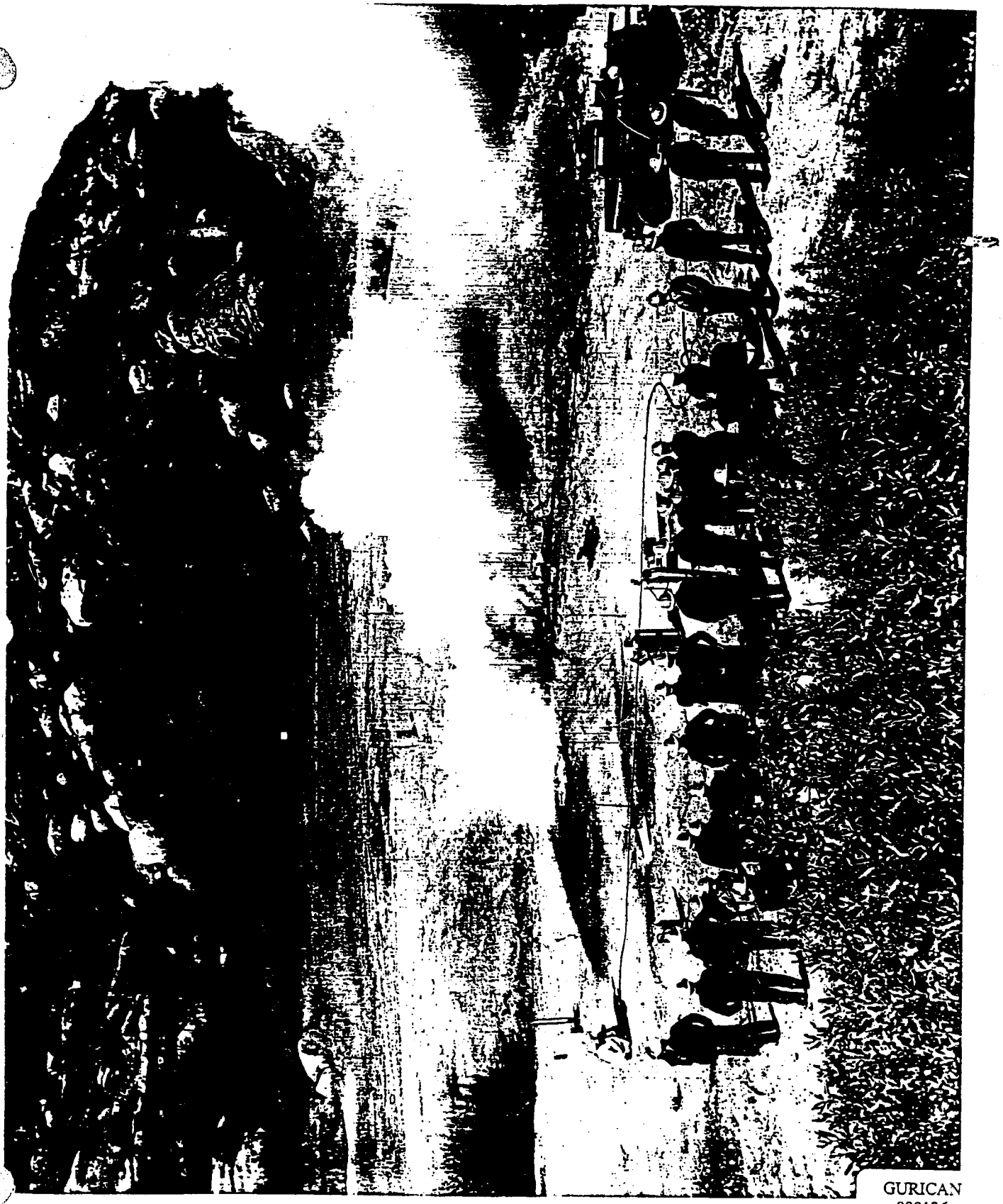
Ex. 34 - 5217

GURICAN
000134

Ex. 34 - 5218

GURICAN
000135

Ex. 34 - 5219



Ex. 34 - 5220

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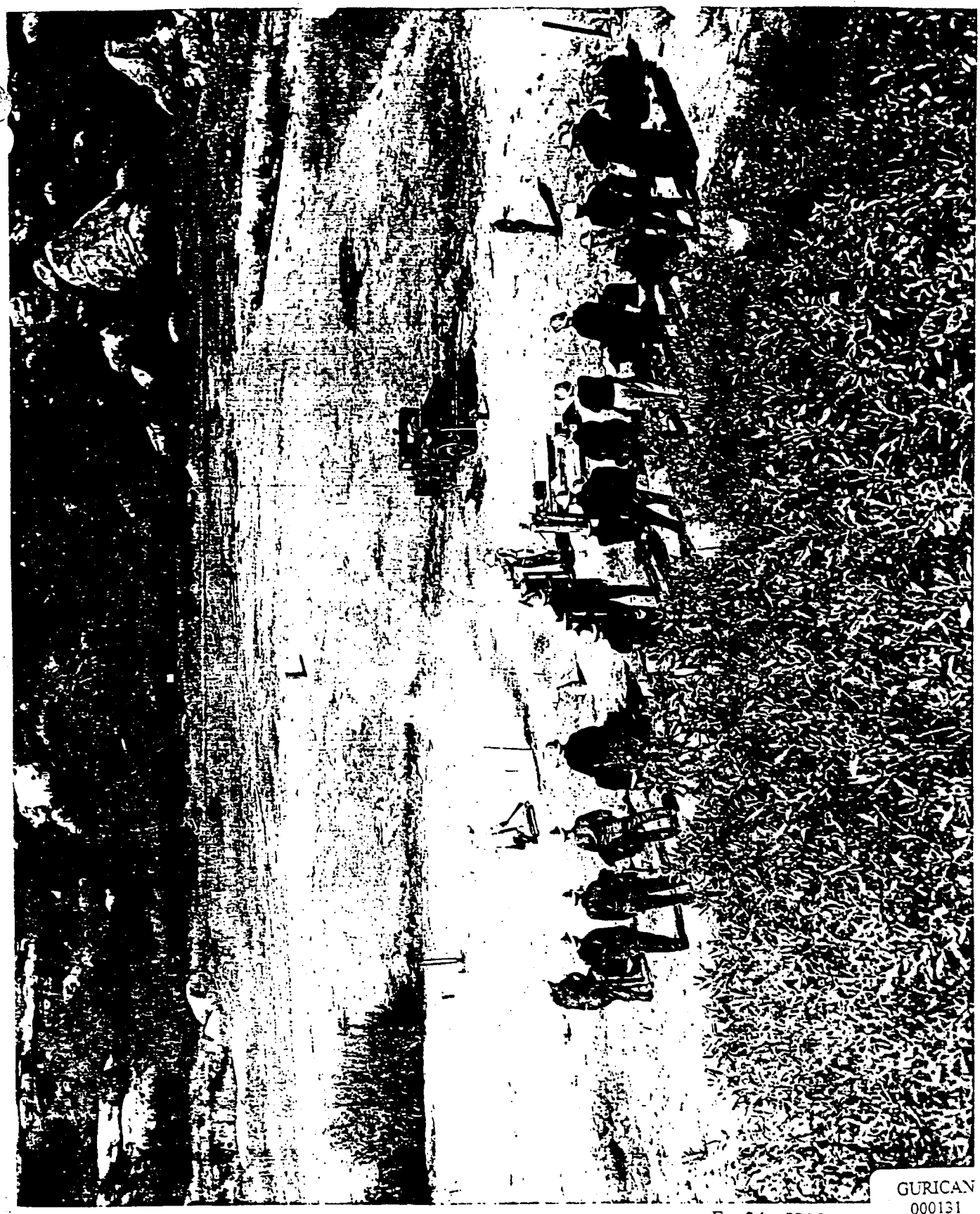

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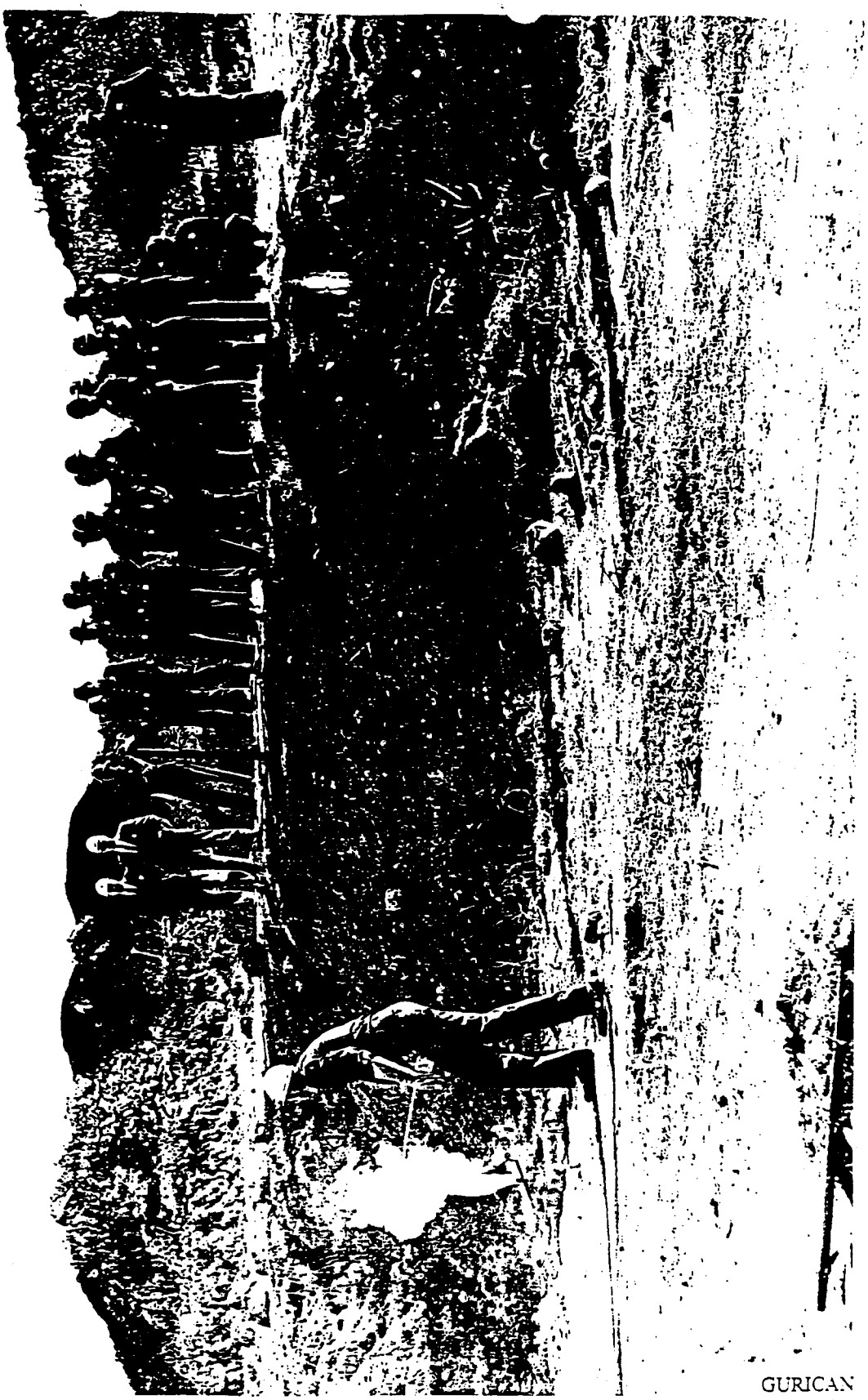

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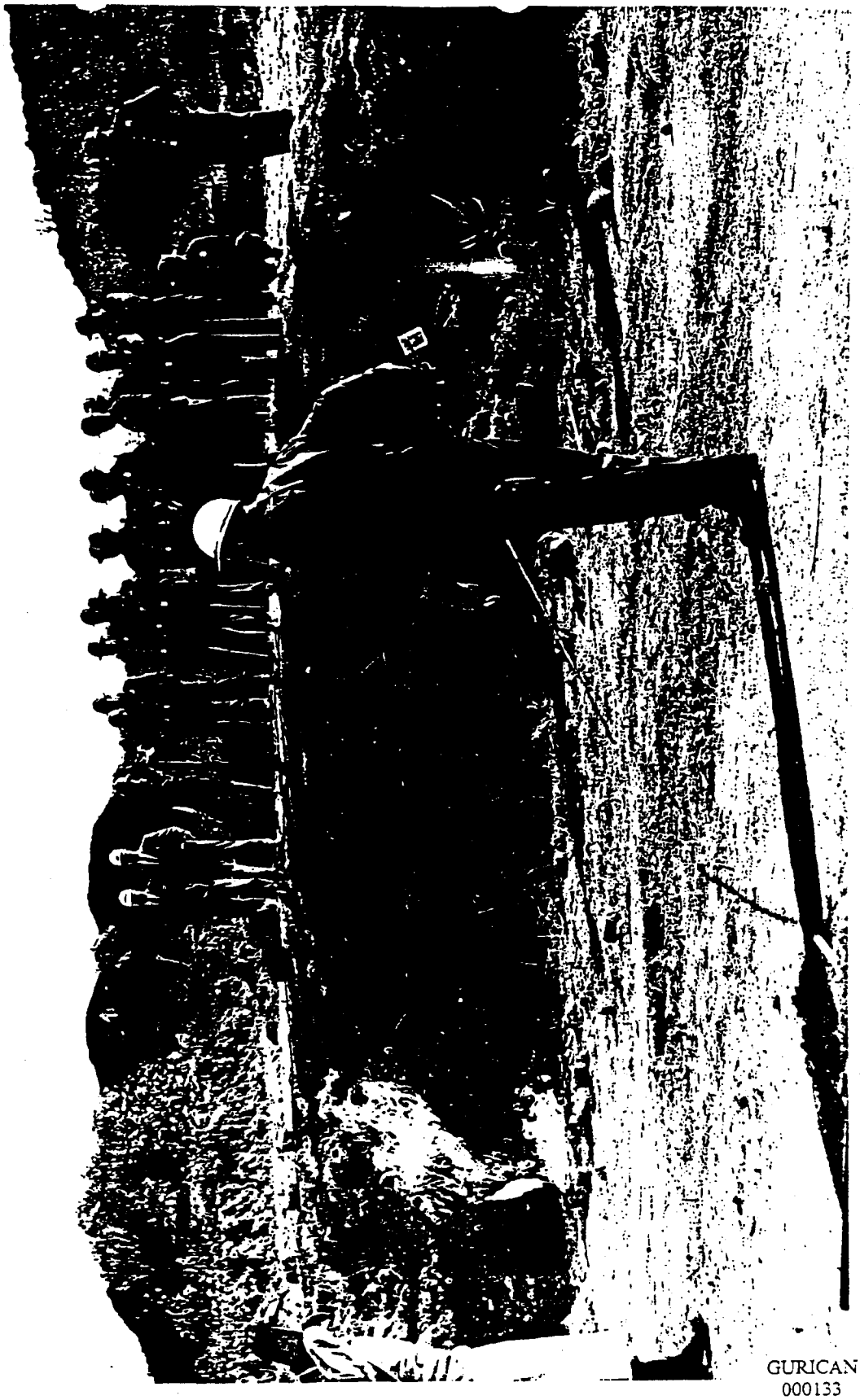

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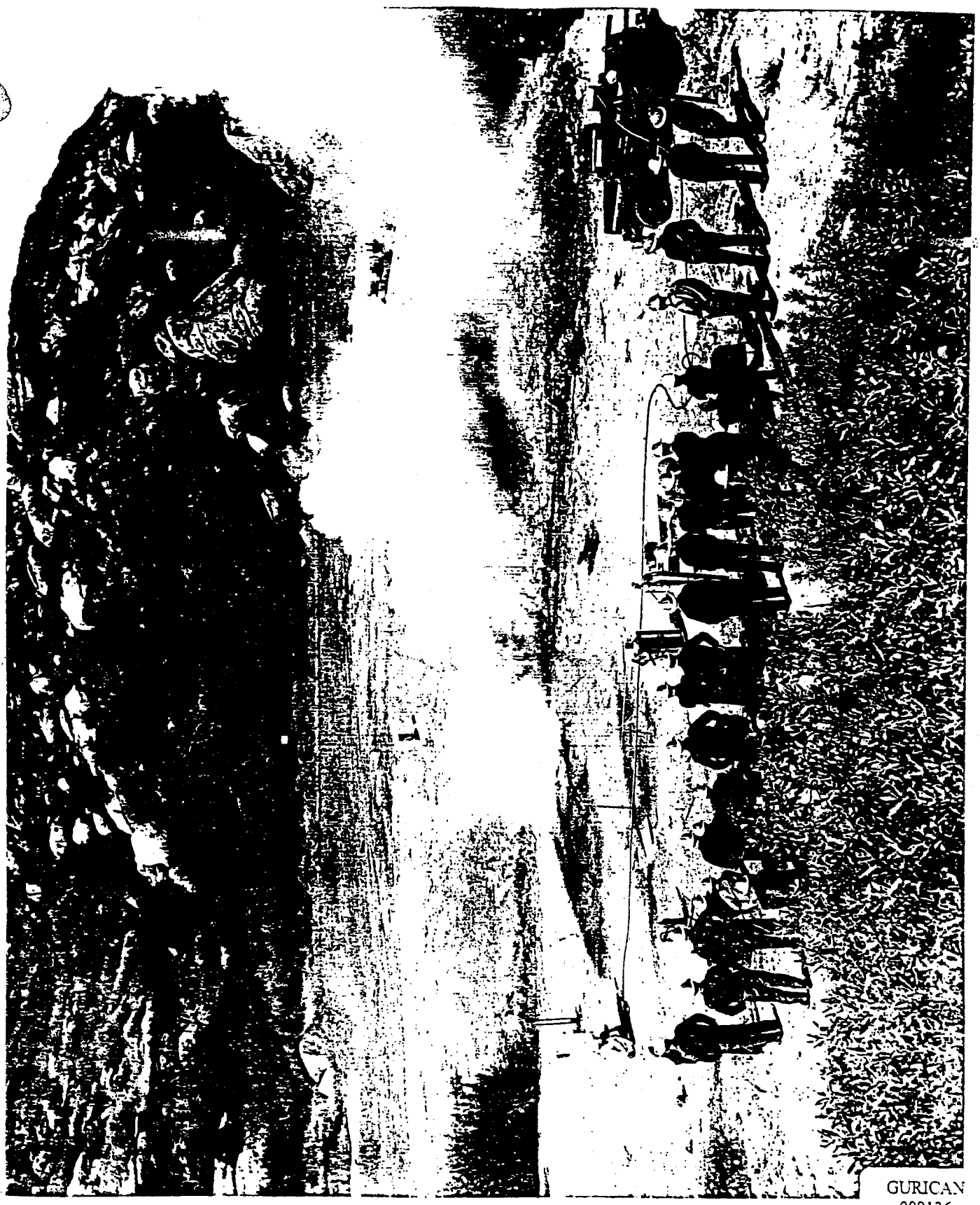
Ex. 34 - 5217

GURICAN
000134

Ex. 34 - 5218

GURICAN
000135

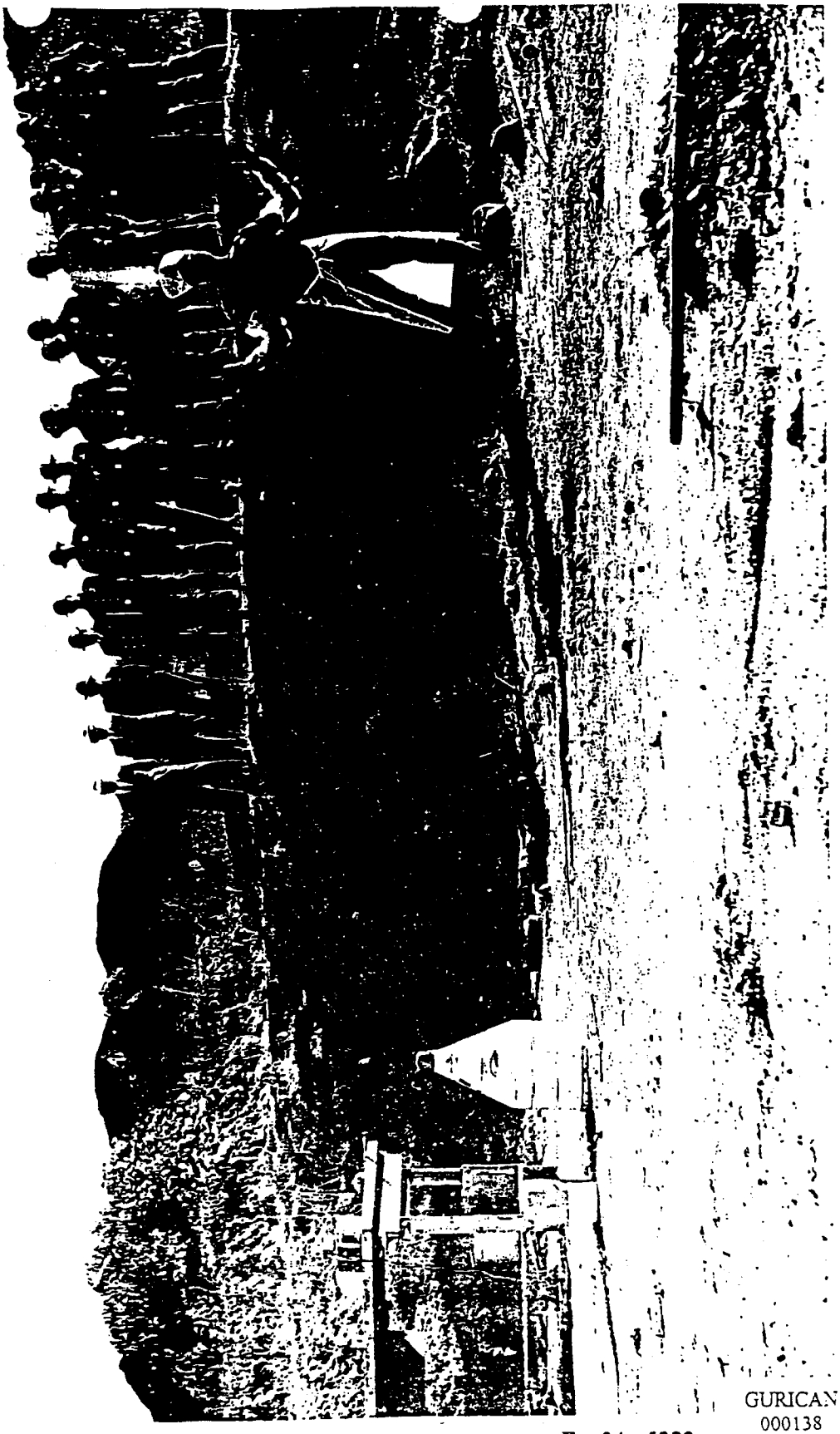
Ex. 34 - 5219



Ex. 34 - 5220

GURICAN
000137

Ex. 34 - 5221



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Ex. 34 - 5222

GURICAN
000139

Ex. 34 - 5223

Ex. 34 - 5224

GURICAN
000141

Ex. 34 - 5225

Tom Kelly
USEPA H-3-1
75 Hothorne St
SF CA 94105

GURICAN
000142

Ex. 34 - 5226

redi-letter® carbonless 869 DUP

. Nami Kadrichu
. Dept Environmental Health
. School of Public Health Science

FROM Joe Gurican Jr.
P.O. Box 1749
Paso Robles CA. 93447

SUBJECT

DATE 9/11/95

MESSAGE

Per our phone conversation please have in closed information on my Father Chemical exposure at Rockeldyne San Su Bar pit and others place a plant.

If you have any questions please do not hesitate to call me at 805-237-4405

Joseph S Gurican Jr.

P.S. I would like a copy of the DOE UCLA report when completed

SIGNED [signature]

REDIFORM: 4S 468
POLY PAK (50 SETS) 4P468
carbonless

☐ NO REPLY NECESSARY ☐ REPLY REQUESTED - USE REV

GURICAN 000143

Ex. 34 - 5227

redi-letter carbonless

DUP

FROM

SUBJECT

DATE / /

MESSAGE

SIGNED

ORM 4S 468
(50 SETS) 4P468
carbonless

☐ NO REPLY NECESSARY

☐ REPLY REQUESTED - USE

GURICAN
000144

Ex. 34 - 5228

Gurican

ROCKETDYNE

SPECIAL DEVICES

CAPABILITIES

OCTOBER, 1960

98

ROCKETDYNE

A DIVISION OF NORTH AMERICAN AVIATION, INC.

CANOGA PARK, CALIFORNIA

Ex. 34 - 5229

GURICAN
000145

Gurican

98

ROCKETDYNE

SPECIAL DEVICES

CAPABILITIES

OCTOBER, 1960

Ex. 34 - 5230

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RESEARCH DEPARTMENT FACILITIES

The programs described herein were conducted by personnel of the Research Department at the Propulsion Field Laboratory located at a remote site in the Santa Susana Mountains near Canoga Park, California. This 2000-acre complex is the Free World's largest rocket development and testing installation and is the site of the extensive facilities of the Research Department. The research activities center around the recently constructed Research Center which contains approximately 20,000 sq. ft. of office space, and laboratories for chemical, optical, acoustic, combustion and instrumentation research. Additional facilities are used for research in heat transfer, fluid transport, ion propulsion, solid and liquid propellants and explosive forming.

A portion of the facilities at the Propulsion Field Laboratory are shown in the Figure. The research center and laboratories are the first buildings on the righ-hand side of the picture.

The following facilities are utilized by the Research Department:

<u>Research Center</u>

Office Space (20,000 sq. ft.)
Chemical & Physical Laboratories (4,800 sq. ft.)

<u>Chemical Engineering Laboratories</u>

Hazardous Chemical Laboratories (1,000 sq. ft.)
Test Bays (6) - (9 x 9 ft. sq.)

<u>Experimental Chemistry Laboratory</u>

(900 sq. ft. + 390 sq. ft. sheltered area)

<u>Solid Propellant Research Facility</u>

Propellant Formulation Laboratory (1,600 sq. ft.)
Propellant Mixing Bays (2) - (12 x 16 ft.)
Physical Properties Laboratory (650 sq. ft.)
Polymer Laboratory (650 sq. ft.)
Igniter Development and Fabrication (1500 sq. ft.)
Pressed Charge Building (400 sq. ft.)
Igniter Test Bays (4) - (10 x 10 ft.)
Continuous Processing Building (800 sq. ft.)
Polymer Pilot Plant (800 sq. ft.)

Ex. 34 - 5231

Solid Propellant Test Facility

Free Flight Tunnel (110 ft. long)
Test Firing Bays (2) - (10 x 10 ft.)
Shops and Control Center (1400 sq. ft.)
Round Ready Storage Building (360 sq. ft.)
Storage Magazines - Solid Propellants (200 sq. ft.)
Igniter (320 sq. ft.)

Propulsion Research Area (Liquid Propellant)

Test Stands	4 - 20,000 lb. thrust
	1 - 30,000 lb. thrust
	1 - 5,000 lb. thrust
	2 - 1,000 lb. thrust
	1 - 500 lb. thrust

Shops and Control Center

Propellant Handling and Test Equipment

Fluid Transport Research Area (Pump and Turbine Work)

Labs and Shop (2000 sq. ft.)

Heat Transfer Facility

Test Bays (4) - (10 x 15 ft.)
Shop and Control Center (1000 sq. ft.)

Electrical Propulsion Lab (1600 sq. ft.)

Instrumentation Laboratories (500 sq. ft.)

Explosive Forming Facility

Firing Pits (5) - Assorted Sizes
Shop and Metallurgical Laboratory (2000 sq. ft.)
Firing Bays (2) - (6 x 8 ft. + attached 200 sq. ft. shop)
Explosives and Initiator Magazines (Storage and Ready)

CAPABILITIES
RESEARCH DEPARTMENT
(Propulsion Field Laboratory
Canoga Park, Calif.)

I TYPES OF PROJECTS

CHEMISTRY	PHYSICAL SCIENCES	LIQUID PROPULSION	SOLID PROPULSION
Performance Calculations	Combustion Mechanisms & Stability	Advanced Liquid Propulsion Research	Propellant Formulations
Synthesis	Heat Transfer	Experimental Instrumentation	Solid Propellant Systems
Kinetics	Electrical Propulsion	Research Design	Polymers
Analysis			Propellant Processing
			Explosive Forming
			SPECIAL DEVICES

II NUMBER OF RESEARCH PERSONNEL

Professional				Total
50	30	38	31	149
Non-Professional				
16	21	31	45	113
66	51	69	76	262

III TYPES OF PROFESSIONAL PERSONNEL

Chemists	51
Physicists	8
Chemical Engineers	42
Mechanical Engineers	22
Aeronautical Engineers	3
Electrical Engineers	13
Mathematicians	7
Metallurgists	1
Miscellaneous	2
	149

Ex. 34 - 5233

Environmental Test Equipment

Within Research

High Temperature Cabinet (to 400°F)
Low Temperature Cabinet (to -100°F)
Humidity Test Chamber Capable of Programmed
  Temperature (-20°F to 200°F) and Humidity (20% to 95%)
Altitude Chambers (2 $ft.^3$ and 45 $ft.^3$)

Within Rocketdyne and Available to Research

Fungus Test Cabinet
Sand and Dust Test Chamber
Salt Spray Test Chamber
Jolt and Jeggle Test
Vibration

Ex. 34 - 5234

PYROTECHNIC IGNITERS

Rocketdyne's slogan is: "First with power for outer space". The majority of the satellites in orbit from the free world were powered by Rocketdyne booster engines. In order to provide the high degree of reliability necessary to carry out its slogan, Rocketdyne has designed, developed, and fabricated tens of thousands of pyrotechnic igniters for its main chamber, gas generator, vernier engines, and solid propellant armament rockets.

Rocketdyne igniters have been service qualified for use in every major liquid propellant ballistic rocket now in routine production for the United States Air Force and Army.* Rocketdyne igniters have successfully passed MIL specifications demonstrating resistance to sand, dust, rain, fungus, etc., by using a hermetically sealed metal barrier between the pyrotechnic charges and climatic conditions. Igniters for solid propellant armament rockets, now shelf items for the United States Air Force, have demonstrated their reliability after six years of surveillance testing.

The pyrotechnics used in Rocketdyne igniters for liquid propellant engines utilize a rubber-epoxy copolymer binder to provide both high grain strength and resistance to temperature shock. Their ability to distribute ignition energy through the combustion chamber is achieved by incorporating fine metal powders in a high heat output composition. The pyrotechnics used in solid propellant motors are pelletized metal and oxidizer enclosed in consumable metal cases.

The reliability of Rocketdyne pyrotechnic igniters for liquid propellant engines is 99.9% and for solid propellant motors is 99.99%, based on over ten thousand tests in both cases. These igniters are classified by the Bureau of Explosives as Electric Squibs, Class "C", or Class "B", per I.C.C. regulations.

A fusible link circuit in Rocketdyne igniters provides a signal that ignition has occurred and also serves as a sequencing monitor. Other features available in pyrotechnic igniters are:

Ability to ignite at altitude
Ability to ignite main-stage propellant flow
Squibless igniters ignited by the hot gases of APU systems

Rocketdyne has extensive facilities, equipment, and technical know-how to develop squib and base charge pyrotechnics, or apply developed pyrotechnics for commercial as well as military ordnance requirements.

Ex. 34 - 5235

*Atlas, Thor, Jupiter and Redstone

PYROTECHNIC IGNITERS

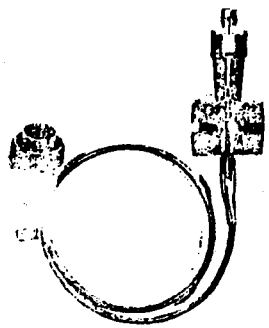
GAS GENERATOR IGNITERS

P/N 650717
GGI TYPE XV
ATLAS MA-2 & MA-3

P/N 651133
GGI TYPE XVI
ATLAS MA-3
WILL REPLACE
650717
LONGER BURNING

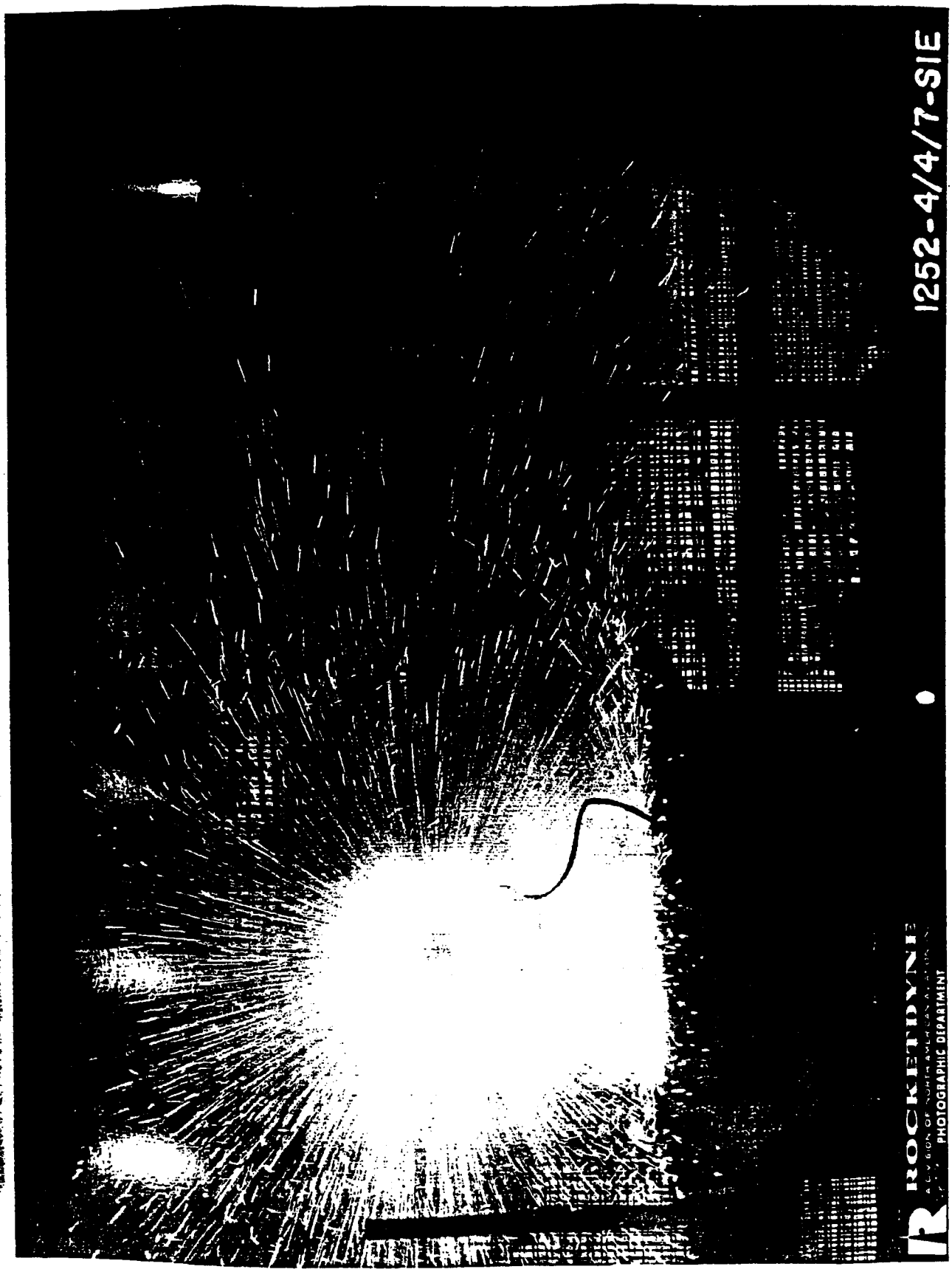
P/N 650900
SQUIBLESS GGI
H-I ENGINE
IGNITED BY
TURBINE STARTER
HOT GASES

P/N 650291
IMVI TYPE V
VERNIER ENGINE IGNITER
ATLAS MA-2
THOR MB-3-1



P/N 650580
ROFI TYPE XI
MAIN THRUST
CHAMBER IGNITER
ATLAS MA-2 THOR,
JUPITER

Ex. 34 - 5236



Ex. 34 - 5237

G.G.I.
650293

1252:12/2/8.S.1C

Ex. 34 - 5238

GURICAN
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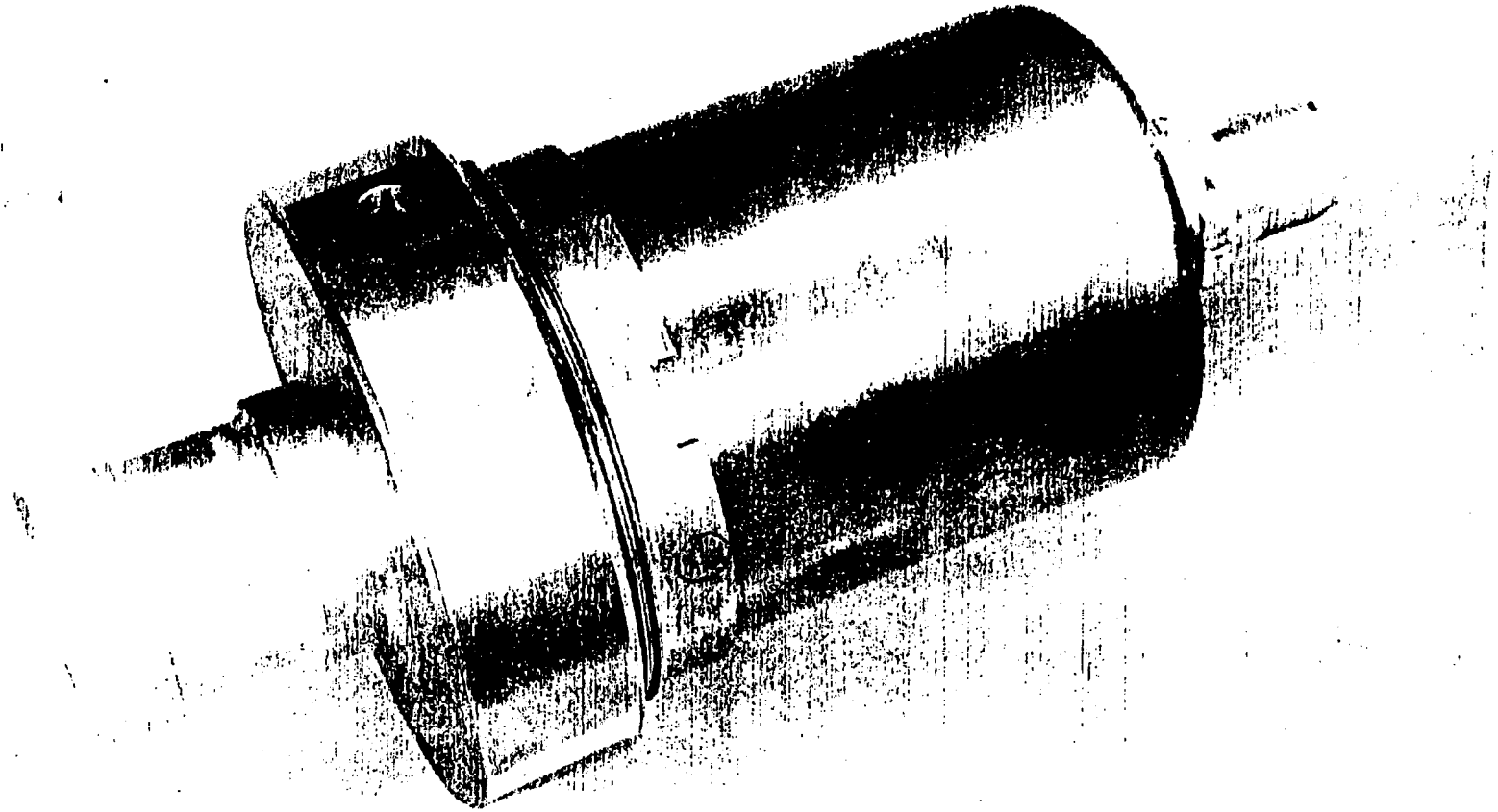
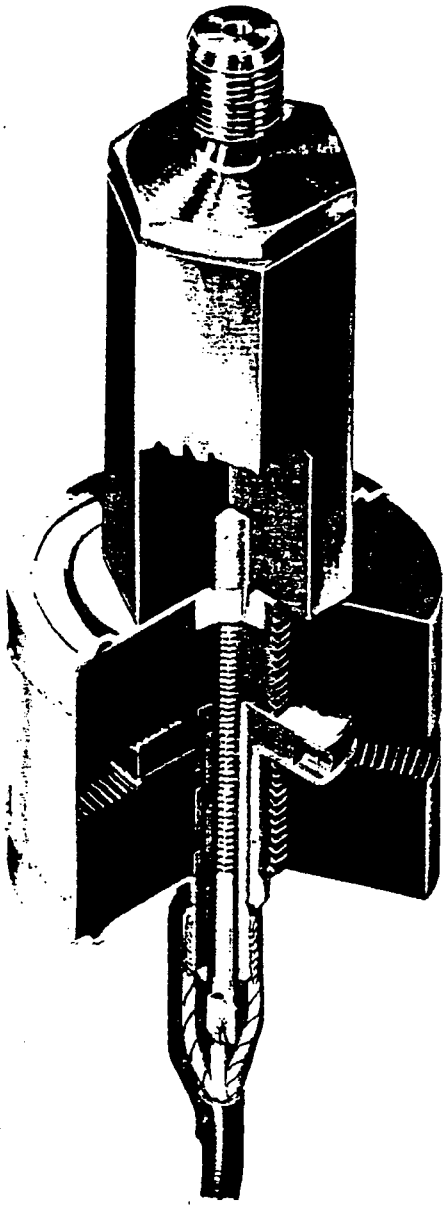


PI IGNITER

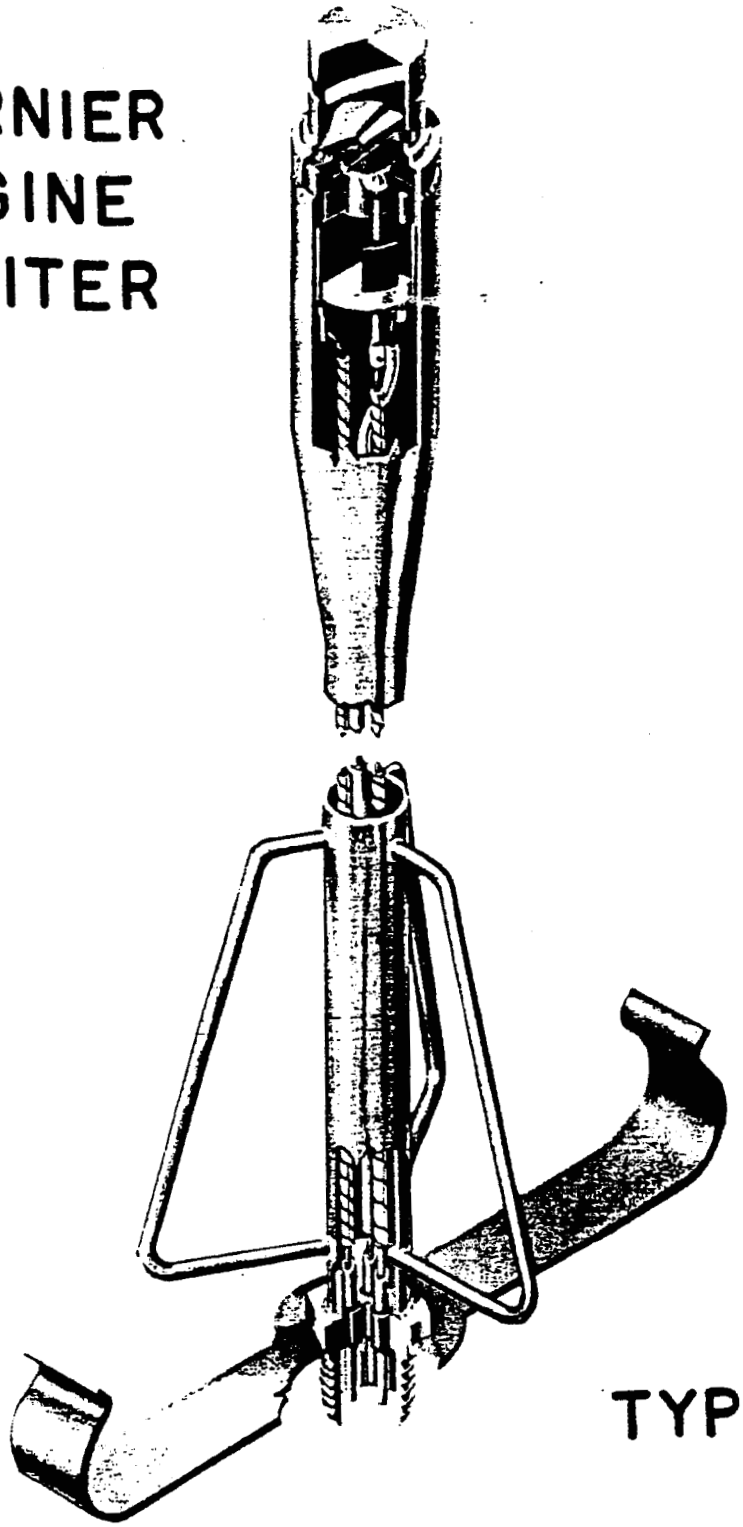
Ex. 34 - 5239

THRUST CHAMBER IGNITER



Ex. 34 - 5240

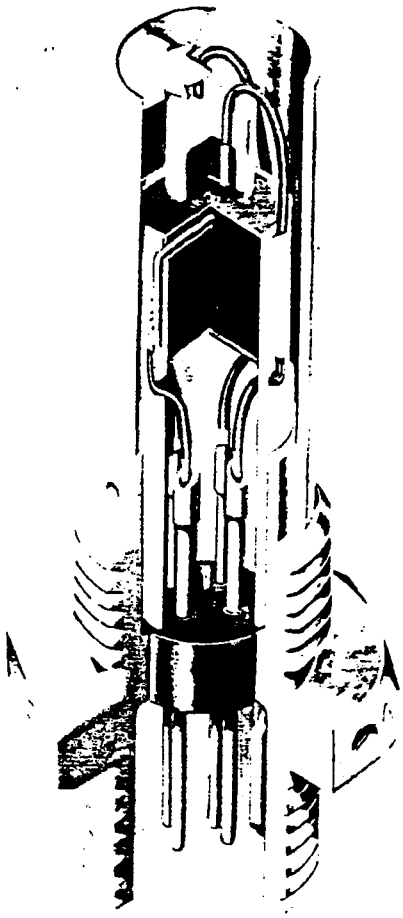
VERNIER ENGINE IGNITER



TYPE V

Ex. 34 - 5241

GAS GENERATOR IGNITER



TYPE IV

Ex. 34 - 5242