

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

FOR NPS USE ONLY  
RECEIVED DEC 12 1978  
DATE ENTERED JUN 6 1979

**NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM**

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS  
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

**1 NAME**

HISTORIC  
Reaction Motors Rocket Test Facility  
AND/OR COMMON

**LOCATION**

STREET & NUMBER  
936 Dogwood Trail at Kent Place  
CITY, TOWN  
Franklin Lakes  
STATE  
New Jersey  
VICINITY OF  
7th  
CODE  
34  
COUNTY  
Bergen  
CONGRESSIONAL DISTRICT  
003  
NOT FOR PUBLICATION

**CLASSIFICATION**

CATEGORY	OWNERSHIP	STATUS	PRESENT USE
<input type="checkbox"/> DISTRICT	<input type="checkbox"/> PUBLIC	<input type="checkbox"/> OCCUPIED	<input type="checkbox"/> AGRICULTURE
<input checked="" type="checkbox"/> BUILDING(S)	<input checked="" type="checkbox"/> PRIVATE	<input type="checkbox"/> UNOCCUPIED	<input type="checkbox"/> COMMERCIAL
<input type="checkbox"/> STRUCTURE	<input type="checkbox"/> BOTH	<input type="checkbox"/> WORK IN PROGRESS	<input type="checkbox"/> EDUCATIONAL
<input type="checkbox"/> SITE	<b>PUBLIC ACQUISITION</b>	<b>ACCESSIBLE</b>	<input type="checkbox"/> ENTERTAINMENT
<input type="checkbox"/> OBJECT	<input type="checkbox"/> IN PROCESS	<input checked="" type="checkbox"/> YES: RESTRICTED	<input type="checkbox"/> GOVERNMENT
	<input type="checkbox"/> BEING CONSIDERED	<input type="checkbox"/> YES: UNRESTRICTED	<input type="checkbox"/> INDUSTRIAL
		<input type="checkbox"/> NO	<input type="checkbox"/> MILITARY
			<input checked="" type="checkbox"/> OTHER:

**OWNER OF PROPERTY**

NAME  
Fred Grimaldi  
STREET & NUMBER  
936 Dogwood Trail  
CITY, TOWN  
Franklin Lakes  
VICINITY OF  
STATE  
New Jersey

**LOCATION OF LEGAL DESCRIPTION**

COURTHOUSE,  
REGISTRY OF DEEDS, ETC.  
Hackensack Courthouse  
STREET & NUMBER  
Main Street  
CITY, TOWN  
Hackensack  
STATE  
New Jersey

**6 REPRESENTATION IN EXISTING SURVEYS**

TITLE  
New Jersey Historic Sites Inventory (#1174.6)  
DATE  
1977  
DEPOSITORY FOR SURVEY RECORDS  
Office of Historic Preservation, Dept. of Environ. Prot.  
CITY, TOWN  
Trenton  
STATE  
New Jersey  
FEDERAL  STATE  COUNTY  LOCAL

# 7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input checked="" type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED      DATE _____
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		

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## DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Situated at the junction of Kent Place and Dogwood Trail, the Rocket Test Facility is a square, one story steel-reinforced structure of repeated course cinderblock built atop a cement slab. The structure is approximately 4 meters in length and 4 meters in width and faces N 40°E.

The lateral tin roof, which is in good condition, slopes from north to south. The north wall contains the entry door and above it, a wooden lintel.

The east wall contains eleven bullet-proof plate glass portals (for viewing the rocket experiments). Four of these portals have been filled in and only their original outlines remain. Three small cast iron pipes penetrate the lower southeastern portion of this wall and terminate abruptly.

Above a single window in the south wall is a double wooden lintel. The window has been covered with wooden planks. Two cast iron pipes emerge at the top of the eastern end of this wall and are set in a vertical position paralleling the wall's surface.

A single window is set in the west wall. Above it a wooden lintel is at the bottom of a demarcation caused by repair or a different type of construction.

The interior of the structure consists of a cement floor and walls. The ceiling is unfinished and roof-support beams are exposed. Contemporary crude wooden shelves have been built on the north, east and west walls by the current owner.

A trough runs along the outside of the base of the western wall and part of the original cement launching pad is still in existence north and east of the blockhouse at ground level.

# 8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input checked="" type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input checked="" type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION
<input checked="" type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input checked="" type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input checked="" type="checkbox"/> INVENTION		

SPECIFIC DATES

1942-44

BUILDER/ARCHITECT

## STATEMENT OF SIGNIFICANCE

The Franklin Lakes Rocket Test Facility Site is one of the very few remaining components of early experimentation in rocket and missile technology in the United States.

The Test Facility, built in 1942, was operated through 1943 and abandoned early in 1944. Rocket motors were tested ranging in size from 300 to 3,000 pounds thrust. These motors were primarily intended for aircraft use as assisted takeoff. Propellants used were Liquid Oxygen and Alcohol or Gasoline.

It was at this site that a prototype of the J.A.T.O. (Jet Assisted Takeoff) Rocket was tested in the 1940's. A mock-up of a P.B.M. bomber - tail end - was built on the site and rocket assembly test-run. This assembly was later test-flown in a P.B.M. at Annapolis, Maryland.

The facility was built and owned by Reaction Motors, a company formed in 1941 by several scientists and headed by the late Lovell Lawrence, Jr., an associate of Dr. Robert H. Goddard. Mr. Lawrence was known for his significant contributions to the development of the Army Redstone Missile (used in the United States Aerospace Program in the launchings of both Alan B. Shepard, Jr., and Virgil I. Grissom).

A small group of people recognized the enormous potential of rocketry in the early 1930's and in 1934 conducted the first meeting of the American Interplanetary Society, later the American Rocket Society. Mostly writers, few of the founders were scientists. All, however, shared the dream of launching a projectile into space.

While the group agreed that rockets were necessary to propel a vehicle into space, there was no pressing need to develop such a propelling agent. Robert Goddard, the father of American rocketry, was undertaking the most extensive work with liquid fuel rockets in the early 1930's. The society primarily only wrote and talked about the feasibility of space travel.

Recognizing progress in rocket research elsewhere, G. Edward Pendray, one of the society's founders, visited experimental facilities in Europe and returning much impressed, recommended the American Rocket Society build its own rocket.

# 9 MAJOR BIBLIOGRAPHICAL REFERENCES

See continuation sheet

## 10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 1/2 acre

UTM REFERENCES

A 

1	8
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5	6	4	9	3	0
---	---	---	---	---	---

4	5	3	8	6	3	0
---	---	---	---	---	---	---

ZONE EASTING NORTHING

C 

--	--	--	--	--	--	--

B 

--	--	--	--	--	--	--

--	--	--	--	--	--	--

--	--	--	--	--	--	--

ZONE EASTING NORTHING

D 

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VERBAL BOUNDARY DESCRIPTION

the boundary of the nominated property is delineated on the enclosed map entitled "Map of Property surveyed for John B. Grimaldi in the Boro of Franklin Lakes, Bergen Co., N.J. December 6, 1958, Amended August 27, 1959".

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

## 11 FORM PREPARED BY

(Terry Karschner, OHP, (609) 292-2023)

NAME / TITLE

Edward J. Lenik, Director (Revised by Terry Karschner, Office of His. Pres.)

ORGANIZATION

Archaeological Research Laboratory

DATE

11/1977

STREET & NUMBER

533 Berdan Avenue

TELEPHONE

(609) 292-2028

CITY OR TOWN

Wayne

STATE

New Jersey

## 12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL XX

STATE     

LOCAL     

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

Deputy [Signature]  
STATE HISTORIC PRESERVATION OFFICER SIGNATURE

11-27-78

TITLE

Deputy Commissioner, Dept. of Environmental Protection

DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

[Signature] 6.6.79  
 DIRECTOR, OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION KEEPER OF THE NATIONAL REGISTER  
 ATTEST: [Signature] 4/3/79  
 KEEPER OF THE NATIONAL REGISTER

UNITED STATES DEPARTMENT OF THE INTERIOR  
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**NATIONAL REGISTER OF HISTORIC PLACES  
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Reaction Motors Rocket Test Facility  
Franklin Lakes  
Bergen County New Jersey 034

CONTINUATION SHEET SIGNIFICANCE      ITEM NUMBER **8**      PAGE 2

Pendray, Franklin Pierce, and David Lasser began work on such a rocket in December 1931. After numerous editions of the design, it was finally tested in November, 1932. Intentionally restrained, the gasoline and liquid oxygen powered rocket surged upward with a thrust of sixty pounds for some twenty seconds. If released, it could have theoretically reached an altitude of over three miles. The second projectile tested some six months later did climb rapidly upward, but at about 250 feet veered downward.

The dubious success of the American Rocket Society's first rockets and the incurred financial hardship was more than offset by the publicity the group received - and subsequent new membership. The introduction of these new scientifically oriented members established a more serious methodical approach to rocket research. One member drawn to the ARS was John Shesta, a civil engineer from Columbia University, who was a lifelong devotee of space travel. Joining the Rocket Society in 1933, Shesta designed his own rocket and tested it on September 9, 1934. Thrusting vertical about 400 feet and horizontal four times that distance, the Shesta rocket reached a speed of about 700 miles an hour. This anticipated Goddard's 700 miles an hour by six months.

Even this major accomplishment was recognized as a fortunate shot-in-the-dark for a program which up to now had been extremely haphazard, and subsequently, ARS began to scientifically seek solutions to their problems. This is reflected by the society's journal, Astronautics, which although not totally discarding space travel theory, now begun publishing engineering and mathematic calculations relevant to such topics as fuel combination, parachute design, tank construction, and motor cooling.

As rocket research and development approached 1939, World War II loomed ominously on the horizon. From a casual investigation of this phenomena research was catapulted into a large-scale governmentally sponsored and supported mass investigation into weapon research.

Four ARS members, Pierce, Shesta, James Wyld, and an electronic engineer named Lovell Lawrence convinced Washington authorities of the importance of their experiments in rocket research and received a Federal contract for the same.

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A week after Pearl Harbor, with the capital received from the Federal government, these four established Reaction Motors, Inc. in a small garage at Pompton Lakes, New Jersey. Tests were conducted at Franklin Lakes. This was the first company established in the United States devoted exclusively to the production of rocket engines. The company did not prosper financially, but it did produce satisfactory rocket motors.

While the Navy never used these liquid-fuel motors extensively for operational take-off assistance, the testing experience helped immeasurably in the development of the dry-fuel rocket take-off units which became known as JATO, the abbreviated term for Jet-Assisted-Take-Off.

Reaction Motors continued after the war to develop rocket engines, but by 1947 the founders found it necessary to reorganize. The reorganization effectively discouraged its founders from further participation in the program and they soon dropped out altogether, thereby ending the pioneer era of Reaction Motors.

Reaction Motors became a division of Thiokol Chemical Corporation in 1958 and was dissolved in 1970.

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CONTINUATION SHEET

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BIBLIOGRAPHY

- Von Braun, Wernher and Frederick I. Ordway. History of Rocketry and Space Travel. New York, 1969 (pp. 80, 81, 84, 94, 101, 151, 203-4).
- Lehman, Milton. This High Man: The Life of Robert Goddard. New York, 1963. (p. 336).
- Williams, Beryl and Samuel Epstein. The Rocket Pioneers. New York, 1955.
- Correspondence with John Shesta, Morrisville, Vermont 05661. April, 1977.
- New York Times. August 19, 1977.
- New York Times. August 12, 1970.
- Fortune Magazine. "Rockets". Volume 42, November, 1950. (pp. 118-133).
- Letter from Frank H. Winter, Research Historian, Astronautics, National Air and Space Museum, Smithsonian Institution, Washington, D.C. 2/7/1978.

**NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM**

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CONTINUATION SHEET

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PAGE

Addenda

Reaction Motors Rocket Test Facility  
Franklin Lakes  
Bergen County  
New Jersey

The Franklin Lakes Test facility of Reaction Motors was built in 1942. It operated through 1943 and was abandoned early in 1944 for the Pompton Plains Plant, which has been destroyed.

Rocket Motors ranging in size from 300 to 3,000 pounds thrust were tested on the Franklin Lakes site. These motors were previously intended for aircraft use, as assisted take off. Propellants used were liquid oxygen and alcohol or gasoline. A mock-up of a PBM bomber tail end was built on the site where the rocket assembly was test-run. Most of the time, however, the rocket motors were brought to the site pre-assembled and launched hastily due to problems with the local authorities. The total time of operation of this test facility was about 16 months.

The only structure of the Rocket Test Facility is a small flat-roofed cinderblock building which measures about 4 meters by 4 meters.

Most of the original cement launching pad is still extant, but a portion was possibly destroyed when Dogwood Trail was constructed in the 1950's. The total length of the pad (a cement slab) is undetermined as the site is almost completely covered by thirty years vegetation.

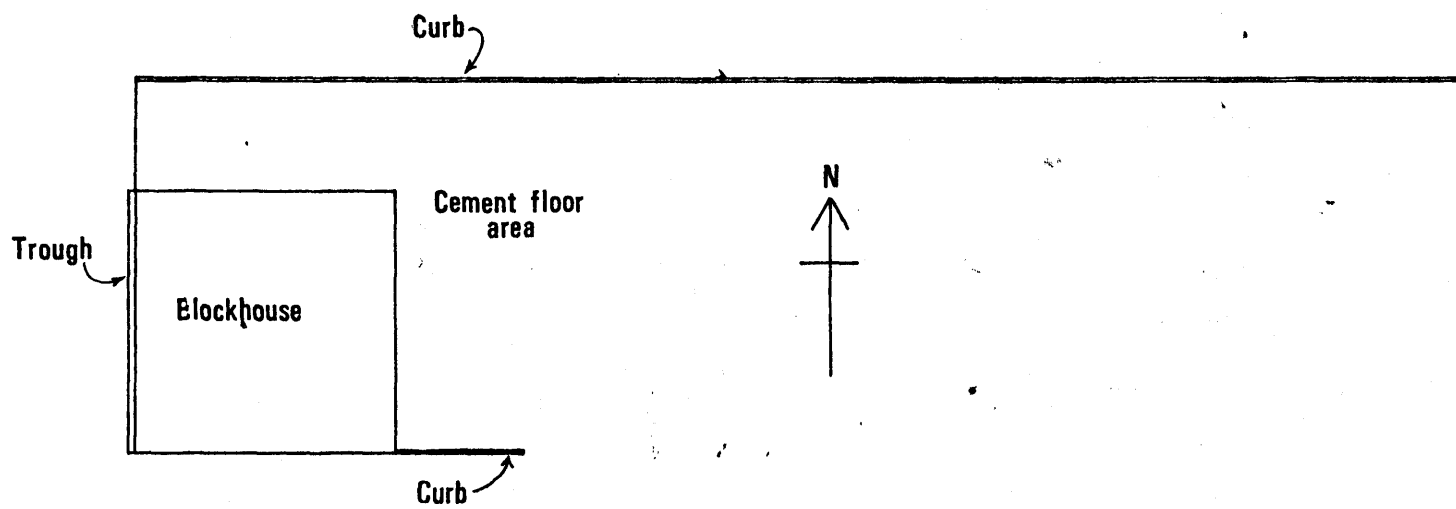
The entire site is about 6 meters (N-S) by 8 meters in the southwest corner of Block 1209, Lot 18 of Franklin Lakes Boro.



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MAY 2 1970

NATIONAL  
REGISTER

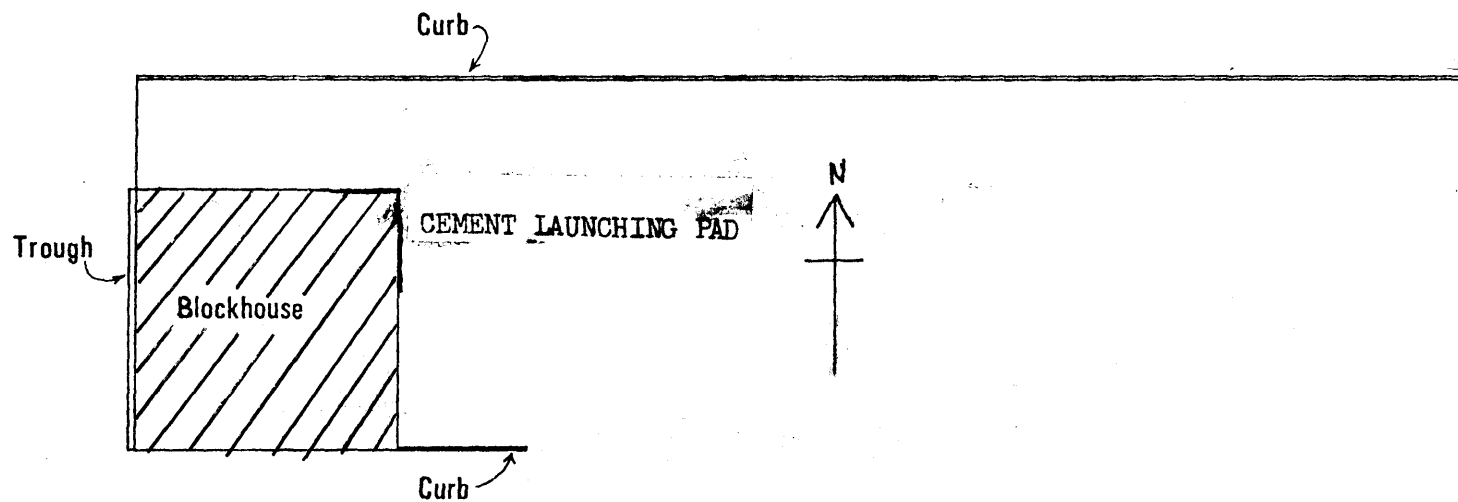


ROCKET TEST FACILITY  
Franklin Lakes , N. J.

Plan View  
SCALE

1 in. (2.54cm) = 3m 117' 2.75 24

fwd



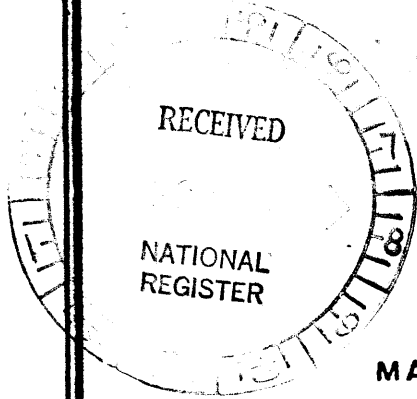
Reaction Motors Rocket Test Facility  
Franklin Lakes  
Bergen County  
New Jersey 034

ROCKET TEST FACILITY  
Franklin Lakes, N. J.  
Plan View  
SCALE  
1 in. (2.54 cm) = 3 m

fwd

G. Waldo Rude & Associates Inc.  
 Licensed  
 Engineers & Land Surveyors  
 30 Colfax Ave. Pompton Lakes, N. J.

Map Reference  
 Map of FRANKLIN FARMS



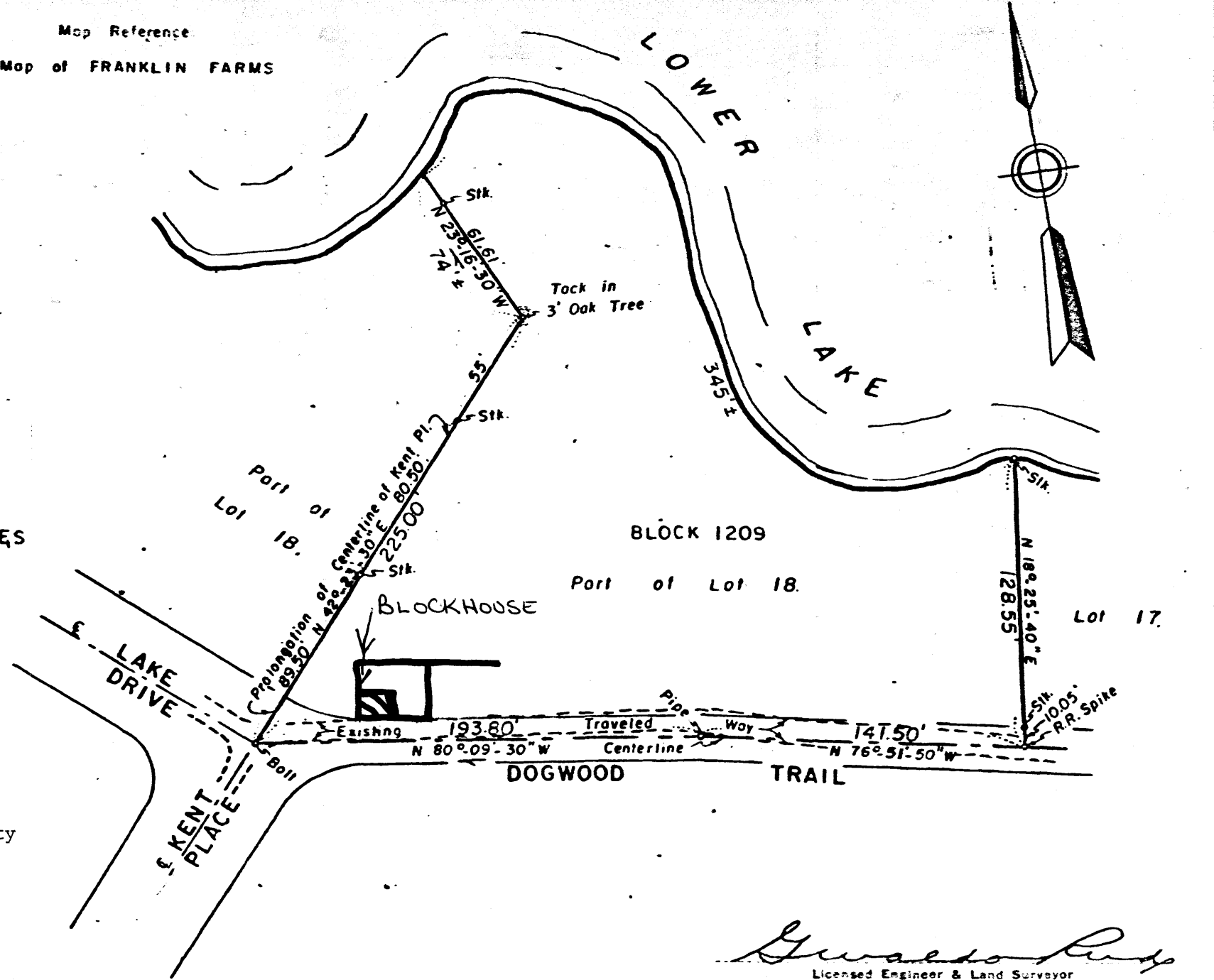
MAP OF PROPERTY  
 SURVEYED FOR  
**JOHN B. GRIMALDI**  
 IN THE  
 BORO. OF FRANKLIN LAKES  
 BERGEN CO. N. J.

December 6, 1958

Amended, August 27, 1959

Reaction Motors Rocket Test Facility  
 Franklin Lakes  
 Bergen County  
 New Jersey 034

Scale: 1" = 60'



*G. Waldo Rude*  
 Licensed Engineer & Land Surveyor