

1-12-73

PH0016900

Form 10-300
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Type all entries - complete applicable sections)

STATE: Michigan	
COUNTY: Dickinson	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
JUN 29 1972	

1. NAME

COMMON:
Ardis Furnace

AND/OR HISTORIC:
Ardis Furnace

2. LOCATION

STREET AND NUMBER:
Aragon and Antoine streets

CITY OR TOWN:
Iron Mountain

STATE: Michigan CODE: 26 COUNTY: Dickinson CODE: 043

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
<input type="checkbox"/> District <input type="checkbox"/> Building <input checked="" type="checkbox"/> Site <input type="checkbox"/> Structure <input type="checkbox"/> Object <input type="checkbox"/> Both	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Both	Public Acquisition: <input type="checkbox"/> In Process <input type="checkbox"/> Being Considered	<input type="checkbox"/> Occupied <input checked="" type="checkbox"/> Unoccupied <input type="checkbox"/> Preservation work in progress
PRESENT USE (Check One or More as Appropriate)			
<input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Educational <input type="checkbox"/> Entertainment	<input type="checkbox"/> Government <input type="checkbox"/> Industrial <input type="checkbox"/> Military <input type="checkbox"/> Museum	<input type="checkbox"/> Park <input type="checkbox"/> Private Residence <input type="checkbox"/> Religious <input type="checkbox"/> Scientific	<input type="checkbox"/> Transportation <input checked="" type="checkbox"/> Other (Specify) Currently being restored

SEE INSTRUCTIONS

4. OWNER OF PROPERTY

OWNER'S NAME:
Menominee Range Historical Foundation (see continuation sheet)

STREET AND NUMBER:
c/o Dr. John A. Newkirk, Professional Grove

CITY OR TOWN: Iron Mountain STATE: Michigan CODE: 26

STATE: Michigan

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.:
Dickinson County Courthouse

STREET AND NUMBER:

CITY OR TOWN: Iron Mountain STATE: Michigan CODE: 26

COUNTY: Dickinson

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY:
Michigan Historical Commission Registered Local Site No. 143

DATE OF SURVEY: 8-13-71 Federal State County Local

DEPOSITORY FOR SURVEY RECORDS:
Division of Michigan History, Department of State

STREET AND NUMBER:
208 N. Capitol, Mutual Building

CITY OR TOWN: Lansing STATE: Michigan CODE: 26

FOR NPS USE ONLY
ENTRY NUMBER: JUN 29 1972
DATE:

7. DESCRIPTION

CONDITION	(Check One)					
	<input type="checkbox"/> Excellent	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated	<input checked="" type="checkbox"/> Ruins	<input type="checkbox"/> Unexposed
	(Check One)			(Check One)		
	<input checked="" type="checkbox"/> Altered	<input type="checkbox"/> Unaltered	<input type="checkbox"/> Moved	<input checked="" type="checkbox"/> Original Site		

DESCRIBE THE PRESENT AND ORIGINAL (if known) PHYSICAL APPEARANCE

John T. Jones was a successful and prosperous resident of Iron Mountain by the turn of the century. At this time he purchased one hundred and forty acres of land bordering Lake Antoine, in Section 30 of Township 40 North, Range 30 West. Upon this property he established a beautiful home, set out a large orchard, and developed the entire acreage into a much-admired estate.

On the northeast quarter of Section 30 he began construction of the Ardis Furnace in 1908. The furnace, as described by the Marquette Daily Mining Journal, consisted of "a huge metal tube, fire brick lined, 120 feet in length, eight feet through, with a slope of one inch to the foot, and rotated when in operation by electrical power." The tube was supported by huge concrete pillars of graduated sizes.

Today all traces of the immense furnace have disappeared, save the concrete pillars, now crumbling and, for the most part, in ruin. The property is owned by the City of Iron Mountain and the Menominee Range Historical Foundation. The Foundation is attempting to clear the site of its many years' growth of brush and weed, and then restore this symbol of inventiveness and farsightedness to its original state.

SEE INSTRUCTIONS

STATE OF MICHIGAN
 DIVISION OF HISTORICAL RECORDS
 100 N. CAPITAL ANNUAL BUILDING
 LANSING, MICHIGAN 48206
 FOR MORE USE ONLY

3. SIGNIFICANCE

PERIOD (Check One or More as Appropriate)

- | | | | |
|--|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> Pre-Columbian | <input type="checkbox"/> 16th Century | <input type="checkbox"/> 18th Century | <input checked="" type="checkbox"/> 20th Century |
| <input type="checkbox"/> 15th Century | <input type="checkbox"/> 17th Century | <input type="checkbox"/> 19th Century | |

SPECIFIC DATE(S) (If Applicable and Known)

AREAS OF SIGNIFICANCE (Check One or More as Appropriate)

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> Aboriginal | <input type="checkbox"/> Education | <input type="checkbox"/> Political | <input type="checkbox"/> Urban Planning |
| <input type="checkbox"/> Prehistoric | <input type="checkbox"/> Engineering | <input type="checkbox"/> Religion/Philosophy | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Historic | <input checked="" type="checkbox"/> Industry | <input type="checkbox"/> Science | _____ |
| <input type="checkbox"/> Agriculture | <input checked="" type="checkbox"/> Invention | <input type="checkbox"/> Sculpture | _____ |
| <input type="checkbox"/> Architecture | <input type="checkbox"/> Landscape Architecture | <input type="checkbox"/> Social/Humanitarian | _____ |
| <input type="checkbox"/> Art | <input type="checkbox"/> Literature | <input type="checkbox"/> Theater | _____ |
| <input type="checkbox"/> Commerce | <input type="checkbox"/> Military | <input type="checkbox"/> Transportation | _____ |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Music | | |
| <input type="checkbox"/> Conservation | | | |

STATEMENT OF SIGNIFICANCE

SEE INSTRUCTIONS

The mining boom that swept the Upper Peninsula during the mid-nineteenth century was the result of the discovery of large deposits of high grade iron ore, easy to mine and comparatively easy to smelt. Towns, villages, and small cities came into being beside the busy mines and furnaces. As the supply of high grade ore was exhausted, these settlements faced the possibility of complete desolation. Iron ore was still available in large quantities, but it was low grade ore, almost impossible to smelt profitably in the existing iron furnaces. A farsighted inventor, John T. Jones, realized the potential of the low grade ore, and his attempts to capitalize on this potential resulted in the development of the Ardis Furnace.

Jones, born in Pittsburgh, Pennsylvania, September 14, 1847, was trained by his father as a skilled mechanic. Employed at various furnaces and furnace operations in Pennsylvania until 1881, Jones came to the Upper Peninsula of Michigan in that same year. Upon arrival in Iron Mountain, he began managing the Keel Ridge mine, owned by P. L. Kimberly, and eventually assumed management of all Kimberly holdings in the Upper Peninsula. Acquiring one hundred and forty acres of land bordering Lake Antoine, Jones developed these acres into a beautiful estate, with a spacious residence to accommodate his growing family. It was on this property that Jones began construction of the Ardis Furnace in 1908.

Prior to the metallization experiments by Jones, iron mines in Michigan had shipped raw low grade ore, largely consisting of waste material directly to the smelting furnaces and steel mills. This produced heavy expenses in transportation costs and yielded very meagre returns. Jones, aware of the vast quantities of low grade ores available on the Gogebic, Vermilion, Mesaba ranges and particularly on the Menominee and Marquette ranges, was eager to complete a process whereby wrought iron could be produced directly from oxide of iron ore. The iron thus created could then be shipped directly to the steel mills, creating a longer life for mining in the area and thereby obtaining a great margin of profit.

The John T. Jones Step Process for the metallization of low grade iron ores began to take shape in 1908 when Jones completed and applied

(continued)

9. MAJOR BIBLIOGRAPHICAL REFERENCES

White, Albert E. "The J. T. Jones Step Process for the Metallization of Low Grade Iron Ores." Mineral Resources of Michigan with Statistical Tables of Production and value of mineral products for 1910 and prior years. Michigan Geological and Biological Survey, Publication 8, Geological Series 6. Lansing: Wynkoop Hallenbeck Crawford Company, State Printers, 1912, pp. 245-252.

Blenko, Ardis Jones. "The Ardis Furnace Built at Iron Mountain, Michigan." Personal recollections in files of Historic Site Survey, Division of Michigan History, Lansing. (continued)

10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY				O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES							
CORNER	LATITUDE				LONGITUDE							
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
NW	°	'	"	°	'	"	45 ⁰⁰	50'	13"	88°	02'	55"
NE	°	'	"	°	'	"						
SE	°	'	"	°	'	"						
SW	°	'	"	°	'	"						

NO UTM
CD

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: Less than one acre

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

STATE:	CODE	COUNTY	CODE

SEE INSTRUCTIONS

11. FORM PREPARED BY

NAME AND TITLE:

Miss Donna L. Stiffler, Asst. Historian

ORGANIZATION

Division of Michigan History

DATE

April 24, 1972

STREET AND NUMBER:

208 N. Capitol, Mutual Building

CITY OR TOWN:

Lansing

STATE

Michigan

CODE

26

12. STATE LIAISON OFFICER CERTIFICATION

As the designated State Liaison 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. The recommended level of significance of this nomination is:

National State Local

Name Samuel A. Milstein

Title Deputy Director - Recreation and SLO

Date 6/8/72

NATIONAL REGISTER VERIFICATION

I hereby certify that this property is included in the National Register.

Robert M. Tuttle
Chief, Office of Archeology and Historic Preservation

Date 6/29/72

ATTEST: William M. [Signature]
Keeper of The National Register

Date _____

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Continuation Sheet)

STATE	
Michigan	
COUNTY	
Dickinson	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
JUN 29 1972	

(Number all entries)

4. Owner of Property

(and) City of Iron Mountain
Iron Mountain, Michigan

8.2 Significance

for patents for the various processes that would result in the actual Step Process and the construction of the experimental Ardis Furnace.

The first part of the process involved bringing the low grade ore in contact with volatile matters, such as coal or wood, and, following this, the oxygen would be driven out of the iron oxide, leaving the iron in the ore in a metallic condition. By a process of magnetic concentration, the iron would then be freed from the gangue, or waste material, and a consistent grade of iron would then result, perfectly acceptable for immediate mill use.

To test his theories, Jones erected the Ardis Furnace, named for his younger daughter. A large kiln was constructed, supplemented by crushers, crushing rolls, elevators, and screens. The kiln took the shape of a long inclined tube which rotated slowly as the ore passed through.

The first test on the furnace took place on October 9, 1908, and the furnace appeared to be working perfectly. Many congratulatory telegrams were received by Jones, whose success later proved rather temporary. Several problems plagued the furnace operation from its inception. Jones eliminated many of the flaws in the procedure but continued to have difficulty with heat control. The cupola attached to the furnace could not withstand the intense heat and was eventually replaced. Following the replacement of the cupola, the furnace appeared to be operating successfully.

The Thomas Manufacturing Company was organized and installed a complete Jones Step Furnace at the Kloman mine at Republic, Michigan. The furnace, following Jones' procedural plan, differed from the Iron Mountain model in that the tubes were placed in a horizontal rather than an inclined position.

However, the problem of heat control could not be solved with the existing materials. The firebrick lining in the kiln of the Ardis Furnace was not strong enough to withstand the various erratic degrees of intense heat. Jones was forced to abandon the Ardis and moved on to concentrate on further, more successful experiments in other parts of the country.

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NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Continuation Sheet)

STATE		Michigan
COUNTY		Dickinson
FOR NPS USE ONLY		
ENTRY NUMBER	DATE	
JUN 29 1972		

(Number all entries)

8.3 Significance

Following his retirement some years later, Jones resided in Iron Mountain with his son, Arthur. At the time of his death on May 4, 1928, Jones was visiting in Sharon, Pennsylvania. The body of the inventor was returned to Iron Mountain and was interred in the Iron Mountain cemetery.

The Ardis Furnace, dismantled and primarily deserted, lies today in ruin. All that remain are the stone braces that held the heavy cylindrical tube. But these few ruins stand as a monument to a pioneer genius and one man's attempt to rescue the Marquette Iron Range from oblivion and despair. Ahead of his times, John T. Jones emphasized the need to capitalize on the low grade iron ores of the Upper Peninsula and, with his Step Furnace Process developed at Iron Mountain, laid the foundation for the eventual successful use of the abundant low grade ores.

9. Major Bibliographical References

Skillings Mining Review, January 11, 1913; June 7, 1913; July 5, 1913; August 30, 1913.

(Marquette) Daily Mining Journal, January 17, 1911, p. 8.

Sawyer, Alvah L. A History of the Northern Peninsula and Its People.

3 vols. Chicago: Lewis Publishing Company, 1911. Vol III, pp. 1505.
Larson, Herbert F., Sr. Bewabic Country. New York: Carlton Press, 1963.

U. S. Patent Office: "John T. Jones, of Iron Mountain, Michigan: Method of Treating Ores." Patent no. 717,864; "John T. Jones, of Iron Mountain, Michigan: Ore-reducing Furnace." Patent no. 866,280; "John T. Jones, of Iron Mountain, Michigan: Ore-reducing Furnace." Patent no. 890,229; "John T. Jones, of Iron Mountain, Michigan: Method of Dephosphorizing Ores." Patent no. 890,230; "John T. Jones, of Iron Mountain, Michigan: Method of Treating Ore." Patent no. 890,231; "John T. Jones, of Iron Mountain, Michigan: Method of Treating Iron Ores." Patent no. 890,234; "John T. Jones, of Iron Mountain, Michigan: Method of Treating Copper Ores." Patent no. 890,563; "John T. Jones, of Iron Mountain, Michigan: Ore-reducing Furnace." Patent no. 891,549; "John T. Jones, of Iron Mountain, Michigan: Methods of Treating Ores." Patent no. 899,405. Copies of the U.S. patents in the Historic Site Survey files, Division of Michigan History, Lansing.

72000608

PROPERTY Ardis Furnace

STATE Mich.

Working number 6.15.72.893

Dickinson

TECH REVIEW

1-12-72

Photos ✓

Maps ✓

REVIEW

How can there be a centennial celebration? None of the chief dates fit.

OK Means 6/20/72

HISTORIAN

OK Sales 6/21

ARCHEOLOGIST

ARCHITECT

OK Chambers 6-21-72

BRANCH CHIEF

EDITORIAL REVIEW

I could have sworn she said "centennial"! anyway, some sort of celebration!

OK Hanson 6/26/72

KEEPER

OK 6/27

National Register write-up _____

Federal Register entry 8-1-72

Acknowledge 6/16/72

Send-back _____

Re-submit _____

Register no. JUN 29 1972

E. 100



UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES

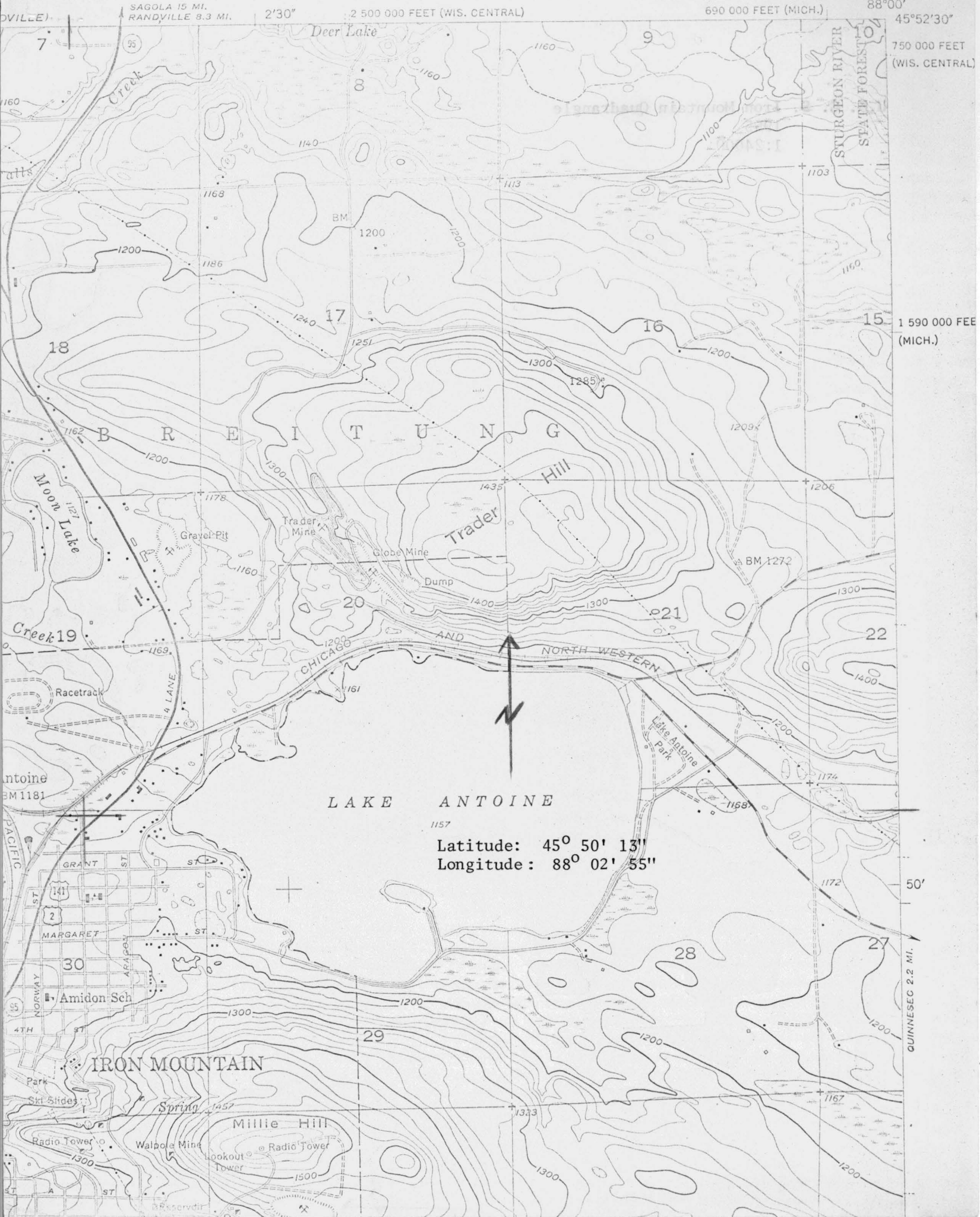
PROPERTY PHOTOGRAPH FORM

(Type all entries - attach to or enclose with photograph)

STATE Michigan	
COUNTY Dickinson	
FOR NPS USE ONLY	
ENTRY NUMBER JUN 29 1972	DATE

SEE INSTRUCTIONS

1. NAME			
COMMON: Ardis Furnace			
AND/OR HISTORIC: Ardis Furnace			
2. LOCATION			
STREET AND NUMBER: Aragon and Antoine streets			
CITY OR TOWN: Iron Mountain			
STATE: Michigan	CODE 26	COUNTY: Dickinson	CODE 043
3. PHOTO REFERENCE			
PHOTO CREDIT: Menominee Range Historical Foundation			
DATE OF PHOTO: 1972			
NEGATIVE FILED AT: Historic Site Survey, Division of Michigan History, Lansing, Michigan			
4. IDENTIFICATION			
DESCRIBE VIEW, DIRECTION, ETC. View is of ruins of original stone supports. Supports are facing south.			



SAGOLA 15 MI.
RANDVILLE 8.3 MI.

2'30"

2 500 000 FEET (WIS. CENTRAL)

690 000 FEET (MICH.)

88°00'

45°52'30"

750 000 FEET
(WIS. CENTRAL)

1 590 000 FEET
(MICH.)

50'

GUINESEC 2.2 MI.

LAKE ANTOINE

1157

Latitude: 45° 50' 13"

Longitude: 88° 02' 55"

IRON MOUNTAIN

Spring

Millie Hill

Walpole Mine

Radio Tower

Lookout Tower

Reservoir

Trader Mine
Globe Mine
Dump

Breitung Hill

CHICAGO AND NORTH WESTERN

Lake Antoine Park

Amidon Sch

Radio Tower

Lookout Tower

Reservoir

Moon Lake

Creek

Antoine

GRANT ST

MARGARET ST

NORWAY

4TH ST

Park

Radio Tower

Lookout Tower

Reservoir

1160

1168

1200

1186

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U.S. G. S. Iron Mountain Quadrangle
1955
1:24000

Form 10-301
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES
PROPERTY MAP FORM**

(Type all entries - attach to or enclose with map)

STATE Michigan	
COUNTY Dickinson	
FOR NPS USE ONLY	
ENTRY NUMBER JUN 29 1972	DATE

SEE INSTRUCTIONS

1. NAME			
COMMON: Ardis Furnace			
AND/OR HISTORIC: Ardis Furnace			
2. LOCATION			
STREET AND NUMBER: Aragon and Antoine Streets			
CITY OR TOWN: Iron Mountain			
STATE: Michigan	CODE 26	COUNTY: Dickinson	CODE 043
3. MAP REFERENCE			
SOURCE: U.S.G.S. Iron Mountain Quadrangle			
SCALE: 1:24000			
DATE: 1955			
4. REQUIREMENTS			
TO BE INCLUDED ON ALL MAPS			
1. Property boundaries where required.			
2. North arrow.			
3. Latitude and longitude reference.			

PH0016900

ENTRIES IN THE NATIONAL REGISTER

STATE MICHIGAN

Date Entered JUN 29 1972

<u>Name</u>	<u>Location</u>
L Ardis Furnace	Iron Mountain Dickinson County
Osena Presbyterian Church	Osena Leelanau County
Civil War Memorial	Adrian Lenawee County

Also Notified

Hon. Philip A. Hart

Hon. Robert P. Griffin

Hon. Philip E. Ruppe

Hon. Guy Vander Jagt

Hon. Marvin L. Esch

Director, Northeast Region

State Liaison Officer

Mr. Samuel Milstein

Acting Deputy Director-Recreation

Department of Natural Resources

Mason Building

Lansing, Michigan 48926

HR

NRowland:mmm

6/28/72