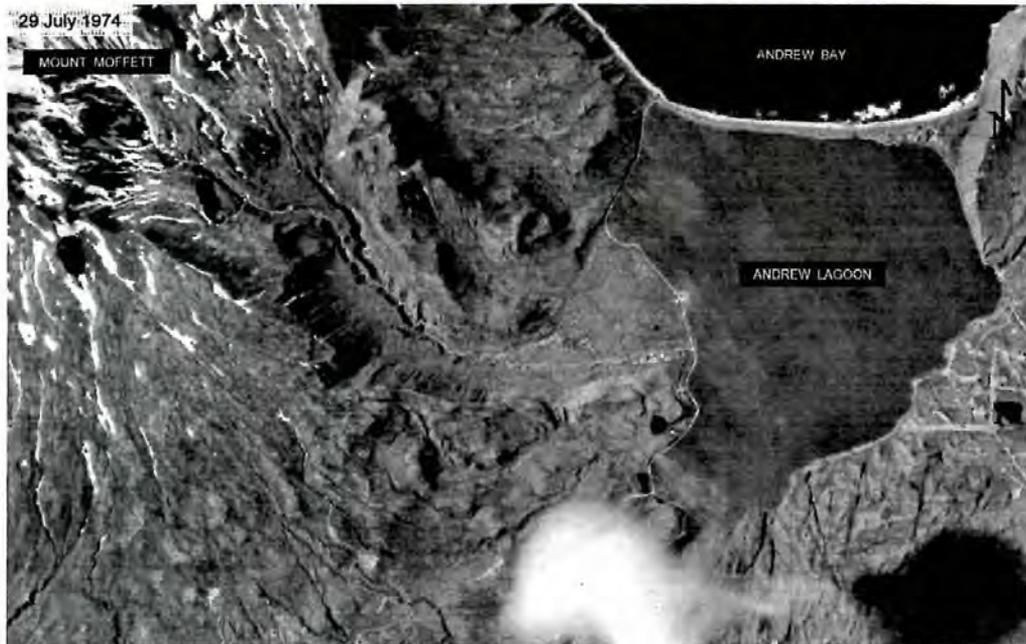




**NORTHERN ADAK ISLAND – ALASKA  
ANDREW LAKE SEAWALL AND MOFFETT VALLEY AREAS  
HISTORICAL PHOTOGRAPHIC ANALYSIS**



Photograph Source: U.S. Geological Survey

U.S. Army Geospatial Center (AGC)  
Warfighter Geospatial Support & Production Directorate  
Hydrologic & Environmental Analysis Branch  
Environmental Analysis Team  
7701 Telegraph Road  
Alexandria, Virginia 22315-3864

**FINAL REPORT  
OCTOBER 2012**

Prepared for the U.S. Navy, Naval Facilities  
Engineering Command Northwest



**LETTER OF TRANSMITTAL**

**To:** Christopher Cora  
 Remedial Project Manager  
 U.S. Environmental Protection  
 Agency  
 1200 6th Ave, ECL-115  
 Seattle, WA 98107

**Date:** 12/6/16  
**From:** Justin Peach  
 Remedial Project Manager  
 NAVFAC NW  
 1101 Tautog Cricle, Suite  
 201  
 Silverdale, WA, 98315

**Subject:** Final Northern Adak Island - Alaska, Andrew Lake Seawall and  
 Moffett Valley Areas, Historical Photographic Analysis

**Transmitting:**

Included  Under Separate Cover

**The Following:**

<input type="checkbox"/> Correspondence	<input type="checkbox"/> Memorandum
<input type="checkbox"/> Report	<input type="checkbox"/> Graphic
<input type="checkbox"/> CD/Disk	<input type="checkbox"/> Construction Drawing
<input type="checkbox"/> Survey	<input type="checkbox"/> Specification
<input type="checkbox"/> Work Plan	<input type="checkbox"/> Shop Drawing
<input type="checkbox"/> Assessment	<input type="checkbox"/> Letter
<input type="checkbox"/> Decision Document	<input type="checkbox"/> Public Press Release
<input type="checkbox"/> Site Closure	<input type="checkbox"/> Comments/Response to Comments
<input type="checkbox"/> Public Information	<input type="checkbox"/> Document for Restoration Advisory Board

**For:**

Review and Comment  
 Approval  
 Signature  
 Use and Files  
 Quotation  
 Payment  
 As Requested  
 Action Noted Below

<b>Number of Copies:</b>	<b>Sets</b> _____	<b>Sheets</b> _____	<b>Documents</b> _____
--------------------------	-------------------	---------------------	------------------------

Chris-  
 Attached for your use is the Final Northern Adak Island - Alaska, Andrew  
 Lake Seawall and Moffett Valley Areas, Historical Photographic Analysis.  
 Please let me know if you have any questions or comments concerning the  
 document.

Justin Peach



## LETTER OF TRANSMITTAL

**To:** Guy Warren  
 Remedial Project Manager  
 Alaska Department of  
 Environmental Conservation  
 555 Cordova Street  
 Anchorage, Alaska 99501

**Date:** 12/6/16

**From:** Justin Peach  
 Remedial Project Manager  
 NAVFAC NW  
 1101 Tautog Cricle, Suite  
 201  
 Silverdale, WA, 98315

**Subject:** Final Northern Adak Island - Alaska, Andrew Lake Seawall and  
 Moffett Valley Areas, Historical Photographic Analysis

**Transmitting:**

Included  Under Separate Cover

**The Following:**

<input type="checkbox"/> Correspondence	<input type="checkbox"/> Memorandum
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<input type="checkbox"/> Survey	<input type="checkbox"/> Specification
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<input type="checkbox"/> Site Closure	<input type="checkbox"/> Comments/Response to Comments
<input type="checkbox"/> Public Information	<input type="checkbox"/> Document for Restoration Advisory Board

**For:**

Review and Comment  
 Approval  
 Signature  
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 Quotation  
 Payment  
 As Requested  
 Action Noted Below

<b>Number of Copies:</b>	<b>Sets</b> _____	<b>Sheets</b> _____	<b>Documents</b> _____
--------------------------	-------------------	---------------------	------------------------

Guy-

Attached for your use is the Final Northern Adak Island - Alaska, Andrew Lake Seawall and Moffett Valley Areas, Historical Photographic Analysis.

A hard drive with all the files we received is also attached.

Please let me know if you have any questions or comments concerning the document.

  
 Justin Peach



**LETTER OF TRANSMITTAL**

**Date:** 12/6/12

**To:** U.S. Fish & Wildlife Service  
Alaska Maritime National  
Wildlife Refuge  
95 Sterling Highway, Suite 1  
Homer, AK 99603

**From:** Justin Peach  
NAVFAC NW  
1101 Tautog Circle  
Silverdale, WA 98315-1101

**Attention:** Merry Maxwell

**Phone:**  
**Fax:**  
**E-mail:**

**Subject:** Final Northern Adak Island - Alaska, Andrew Lake Seawall and  
Moffett Valley Areas, Historical Photographic Analysis

- |   |  |   |
|---|--|---|
| <b><u>Transmitting:</u></b>                 |  | <b><u>For:</u></b>                          |
| <input type="checkbox"/> Included           | <input type="checkbox"/> Under Separate Cover                    | <input type="checkbox"/> Review and Comment |
|   |  | <input type="checkbox"/> Approval           |
|   |  | <input type="checkbox"/> Signature          |
|   |  | <input type="checkbox"/> Use and Files      |
|   |  | <input type="checkbox"/> Quotation          |
|   |  | <input type="checkbox"/> Payment            |
|   |  | <input type="checkbox"/> As Requested       |
|   |  | <input type="checkbox"/> Action Noted Below |
| <b><u>The Following:</u></b>                |  |   |
| <input type="checkbox"/> Correspondence     | <input type="checkbox"/> Memorandum                              |   |
| <input type="checkbox"/> Report             | <input type="checkbox"/> Graphic                                 |   |
| <input type="checkbox"/> CD/Disk            | <input type="checkbox"/> Construction Drawing                    |   |
| <input type="checkbox"/> Survey             | <input type="checkbox"/> Specification                           |   |
| <input type="checkbox"/> Work Plan          | <input type="checkbox"/> Shop Drawing                            |   |
| <input type="checkbox"/> Assessment         | <input type="checkbox"/> Letter                                  |   |
| <input type="checkbox"/> Decision Document  | <input type="checkbox"/> Public Press Release                    |   |
| <input type="checkbox"/> Site Closure       | <input type="checkbox"/> Comments/Response to Comments           |   |
| <input type="checkbox"/> Public Information | <input type="checkbox"/> Document for Restoration Advisory Board |   |

<b>Number of Copies:</b>	<b>Sets</b> _____	<b>Sheets</b> _____	<b>Documents</b> _____
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Merry-  
Attached for your use is the Final Northern Adak Island - Alaska, Andrew Lake Seawall and Moffett Valley Areas, Historical Photographic Analysis.

Please let me know if you have any questions or comments concerning the document.

  
 Justin Peach



# LETTER OF TRANSMITTAL

**Date:** 12/6/12

**To:** Aleut Real Estate, LLC  
 4000 Old Seward Highway  
 Suite 300  
 Anchorage, AK 99503

**From:** Justin Peach  
 NAVFAC NW  
 1101 Tautog Circle  
 Silverdale, WA 98315-1101

**Attention:** Tony Cange, President

**Phone:**

**Fax:**

**E-mail:**

**Subject:** Final Northern Adak Island - Alaska, Andrew Lake Seawall and Moffett Valley Areas, Historical Photographic Analysis

**Transmitting:**

Included  Under Separate Cover

**For:**

Review and Comment  
 Approval  
 Signature  
 Use and Files  
 Quotation  
 Payment  
 As Requested  
 Action Noted Below

**The Following:**

Correspondence  Memorandum  
 Report  Graphic  
 CD/Disk  Construction Drawing  
 Survey  Specification  
 Work Plan  Shop Drawing  
 Assessment  Letter  
 Decision Document  Public Press Release  
 Site Closure  Comments/Response to Comments  
 Public Information  Document for Restoration Advisory Board

<b>Number of Copies:</b>	<b>Sets</b> _____	<b>Sheets</b> _____	<b>Documents</b> _____
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Tony-  
 Attached for your use is the Final Northern Adak Island - Alaska, Andrew Lake Seawall and Moffett Valley Areas, Historical Photographic Analysis.

Please let me know if you have any questions or comments concerning the document.

  
 Justin Peach



# NORTHERN ADAK ISLAND – ALASKA ANDREW LAKE SEAWALL AND MOFFETT VALLEY AREAS HISTORICAL PHOTOGRAPHIC ANALYSIS



Photograph Source: U.S. Geological Survey

U.S. Army Geospatial Center (AGC)  
Warfighter Geospatial Support & Production Directorate  
Hydrologic & Environmental Analysis Branch  
Environmental Analysis Team  
7701 Telegraph Road  
Alexandria, Virginia 22315-3864

**FINAL REPORT**  
**OCTOBER 2012**

Prepared for the U.S. Navy, Naval Facilities  
Engineering Command Northwest



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PAGE 7 ..... PROJECT AREA: AERIAL COVERAGE

PAGE 8 ..... INTERPRETATION OF HISTORICAL  
AERIAL PHOTOGRAPHY

PAGE 9 ..... HISTORICAL REVIEW

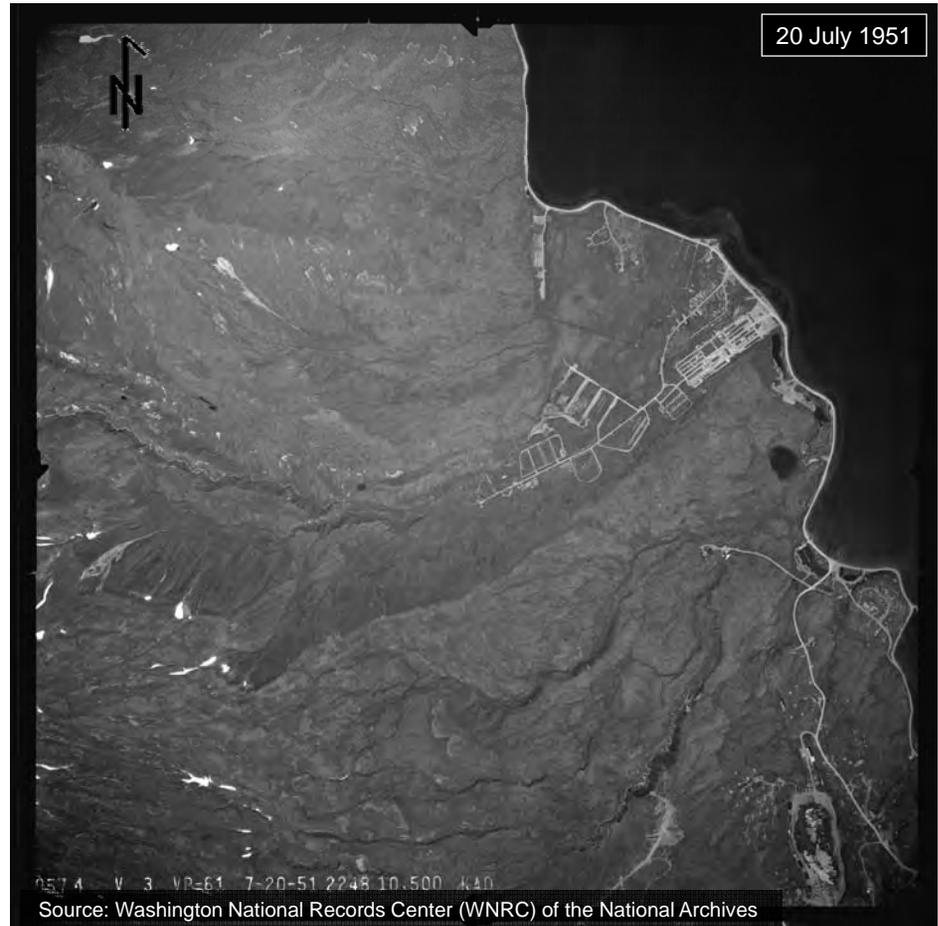
PAGES 10-21 ..... PHOTOGRAPHIC ANALYSIS:  
ANDREW LAKE SEAWALL

PAGES 22-59 ..... PHOTOGRAPHIC ANALYSIS:  
MOFFETT VALLEY

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PAGE 67 ..... AERIAL PHOTOGRAPHS AND  
SATELLITE IMAGERY - SOURCE LIST

PAGE 68 ..... SOURCES OF INFORMATION



Adak, Alaska: vertical black & white aerial photograph. This photo is an example of the aerial data that was located and acquired for use in this report.



# NOTICE AND INTRODUCTION

## **Northern Adak Island, Aleutian Island Chain, Alaska, Andrew Lake Seawall and Moffett Valley Areas, Historical Environmental Photographic Analysis**

By  
U.S. Army Geospatial Center (AGC)  
Warfighter Geospatial Support & Production Directorate  
Hydrologic and Environmental Analysis Branch  
Environmental Analysis Team  
7701 Telegraph Road  
Alexandria, Virginia 22315-3864

### **October 2012 Final Report**

Prepared for the U.S. Navy  
Naval Facilities Engineering Command Northwest  
Silverdale, Washington

## **NOTICE**

The views, opinions, and conclusions in this report are those of the author and should not be construed as official Department of Army positions or policy unless so designated by other documentation.

Photographic items contained in this report may be restricted for use other than research. It is the responsibility of the party using photographs from this study to contact the U.S. Army Geospatial Center, Warfighter Geospatial Support & Production Directorate in order to ascertain clearance for use.

## **INTRODUCTION**

This report of findings presents the results of a historical photographic analysis (HPA) of the Moffett Valley and Andrew Lake Seawall areas on the northern portion of Adak Island (state of Alaska). The Hydrologic and Environmental Analysis Branch of the Warfighter Geospatial Support & Production Directorate was tasked to search, collect, and analyze historical photographic records and historic map data relative to the project area from 1951 to 2006.

This report contains most findings derived from the historical photographic analysis to date. This report showcases select findings from features identified within the project areas.



# METHODOLOGY



Source: National Geospatial-Intelligence Agency (NGA)

## METHODOLOGY

The analysis presented in this Final Report is primarily based upon interpretation of panchromatic photography over the project area spanning 1944 to 2006. Stereo viewing was employed where overlapping photographs permitted its use. Significant features, derived through photo analysis, are displayed on select photos in this study.

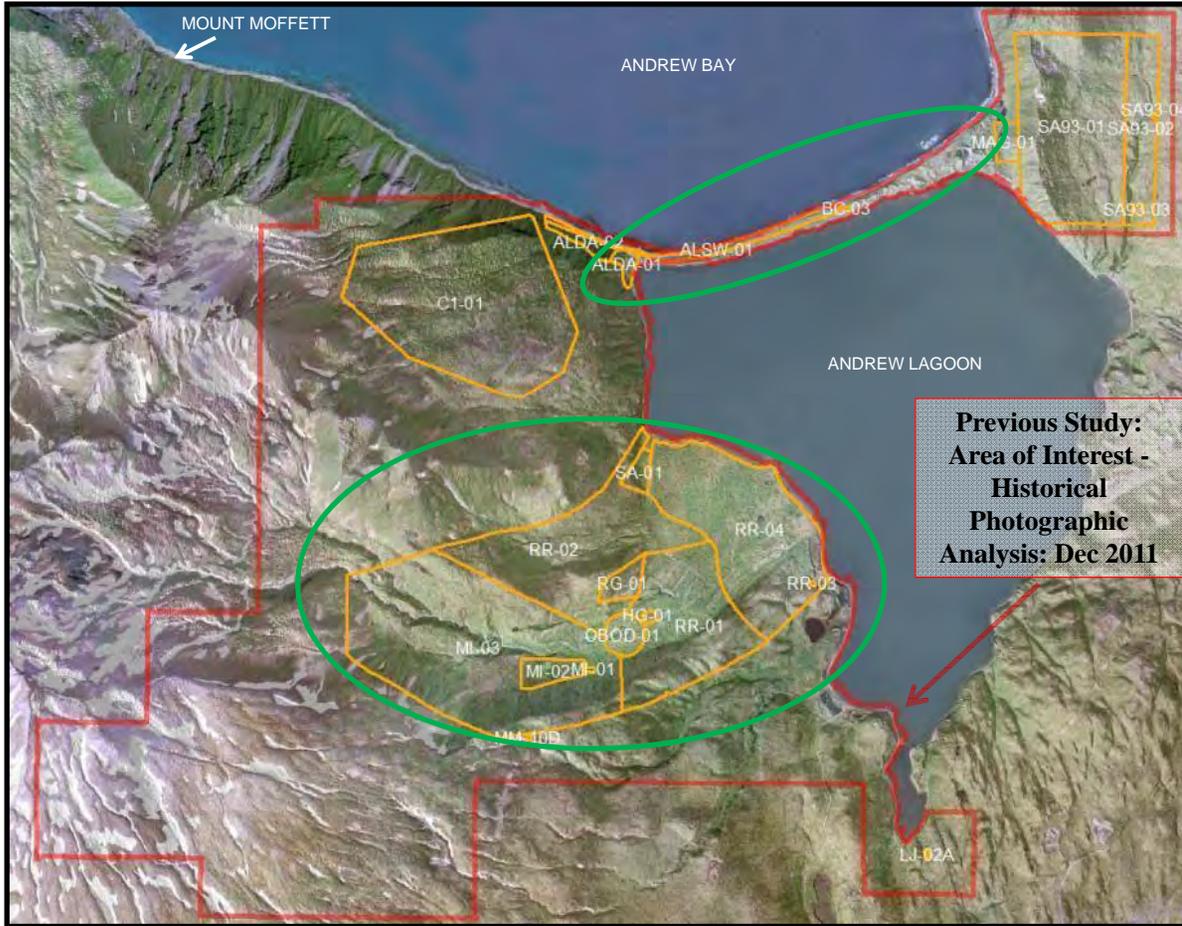
Range and other site names and numbers are derived from historical maps, still photographs, and other documents.

In this report, the terms ‘Andrew Lake’ and ‘Andrew Lagoon’ may occur interchangeable (based upon the source of the historic reference). Both terms identify the same body of water on northern Adak Island.

A GIS package is included along with this Final Report presentation.



# PROJECT AREA LOCATION



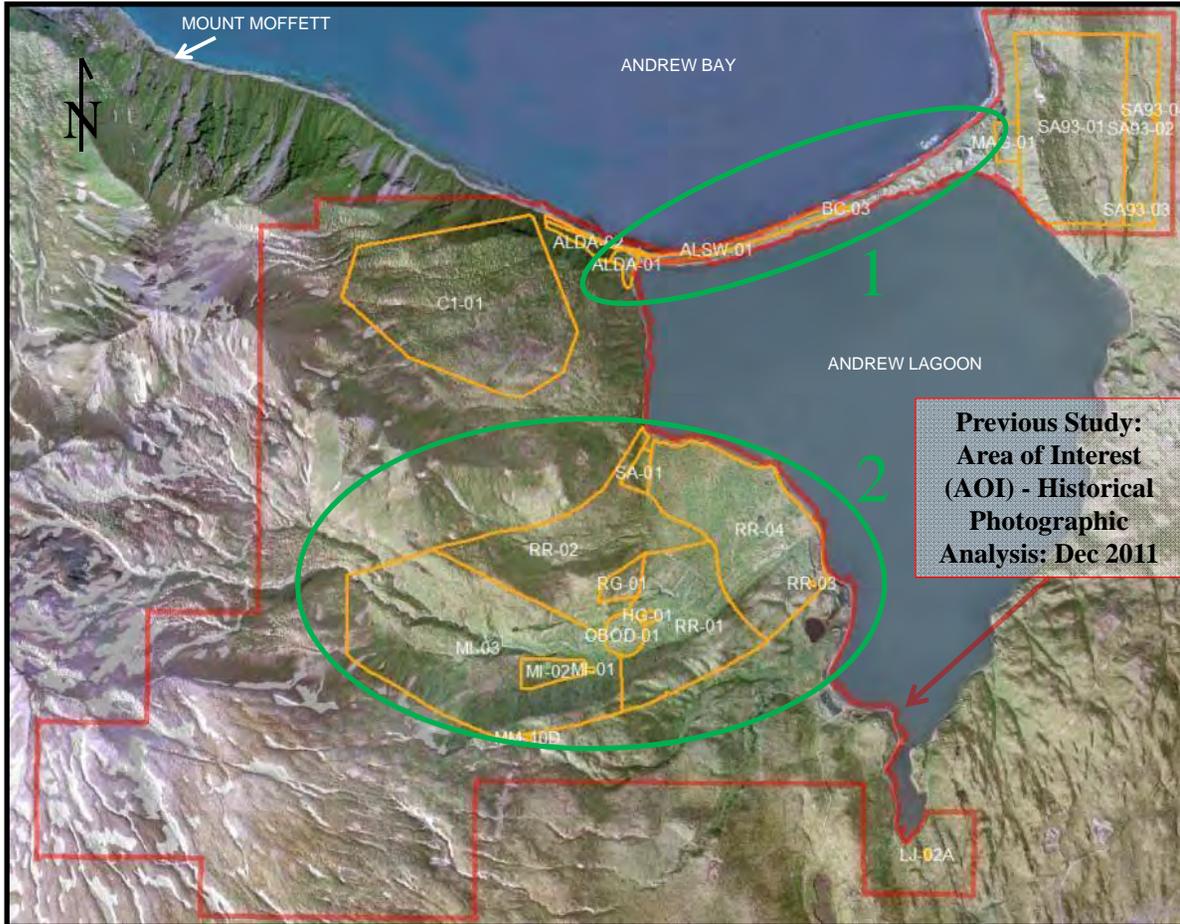
Source: Aerial Photograph, underlying digital elevation model and boundary shapefiles, U.S. Navy, 2000.

Source: U.S. Geological Survey; EarthExplorer

  = Areas of Interest - Historical Photographic Analysis 2012



# PROJECT AREA ANALYSIS



For ease of use and continuity of this presentation, the areas of historical photographic analysis are divided into two sections, as denoted on this page.

The two sections, Andrew Lake Seawall and Moffett Valley (OB/OD) area, were created for use in this report only and have no relevance outside of this report.

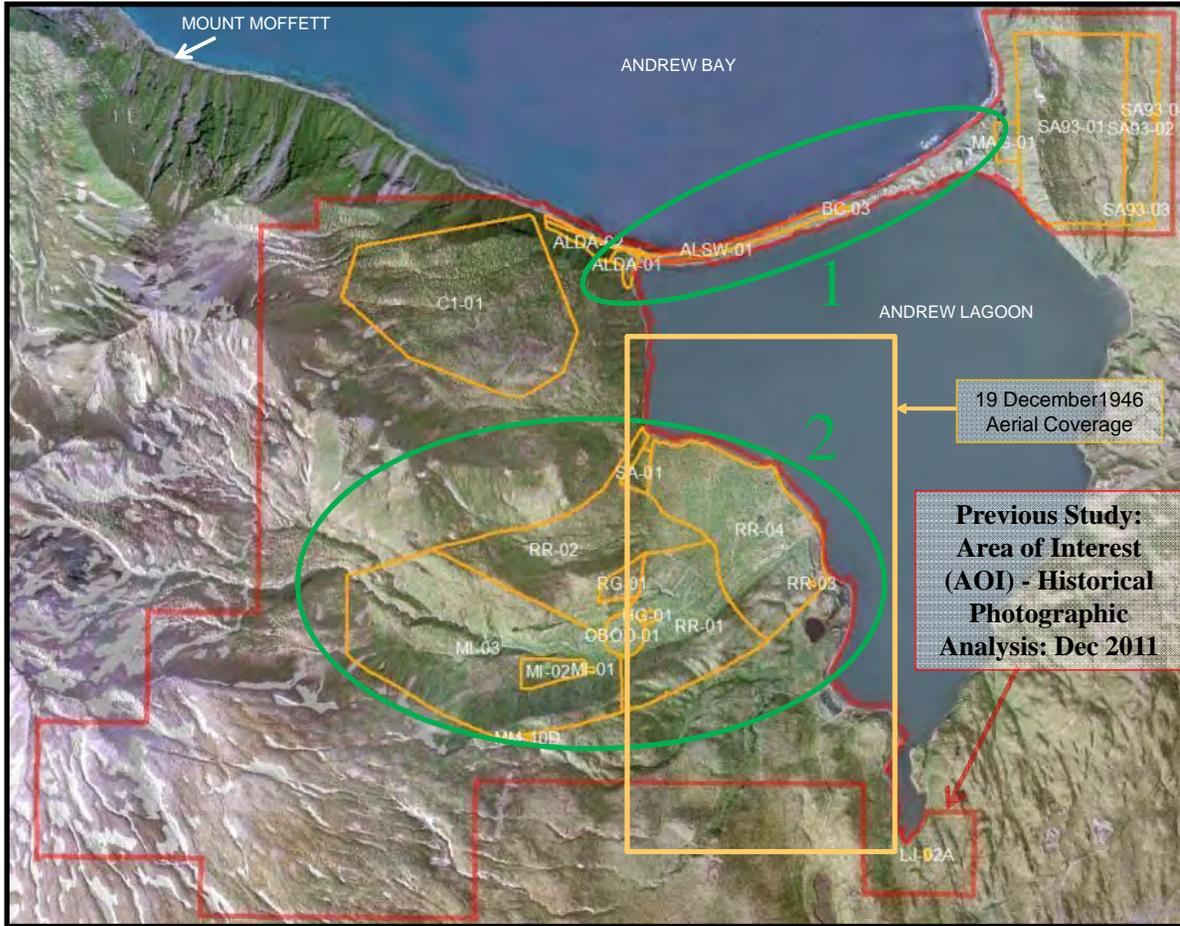
- 1 – ANDREW LAKE SEAWALL**
- 2 – MOFFETT VALLEY**

Source: Aerial Photograph, underlying digital elevation model and boundary shapefiles, U.S. Navy, 2000.

 = Areas of Interest (AOIs) - Historical Photographic Analysis 2012



# PROJECT AREA: AERIAL COVERAGE



Source: Aerial Photograph, underlying digital elevation model and boundary shapefiles, U.S. Navy, 2000.

 = Areas of Interest (AOIs) - Historical Photographic Analysis 2012

AOI photographic coverage is complete for:

- 1944 (aerial mosaic; snow)
- 1951
- 1974 (1:76K small-scale photos)
- 1987
- 2001 (color orthophoto)
- 2006 (color)
- 2012 (snow) – GIS package only

Vertical aerial photograph coverage is incomplete for:

-  1946 (see coverage - left)

**1 – ANDREW LAKE SEAWALL**

**2 – MOFFETT VALLEY**

See Page 67 for a complete listing of aerial photographic sources.



# INTERPRETATION OF HISTORICAL AERIAL PHOTOGRAPHY



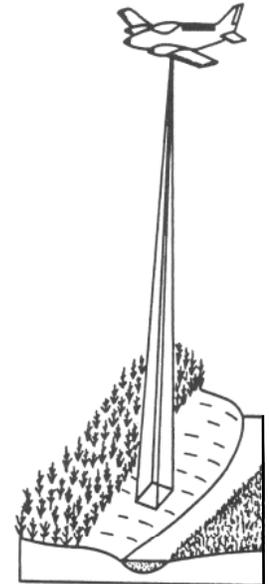
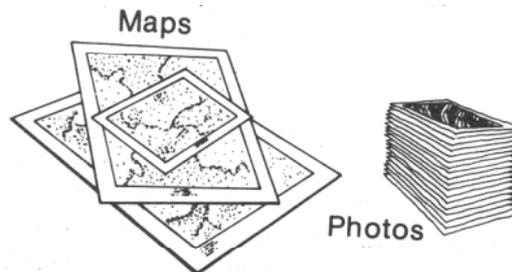
The US Army Geospatial Center (AGC) was tasked to conduct photo interpretation of historical aerial photography over selected areas-of-interest of Northern Adak, Alaska in support of the Base Realignment & Closure Program (BRAC).

## Historical Aerial Photographic Study

- - IDENTIFICATION OF FEATURES BY SCALE, SHAPE, TONE, PATTERN, ORIENTATION, SHADOW, AND TEXTURE
- - CHANGE DETECTION OF MAN-MADE OR NATURALLY-OCCURRING FEATURES
- - PLACING LOCATIONS OF HISTORICAL FEATURES ON THE CURRENT LANDSCAPE

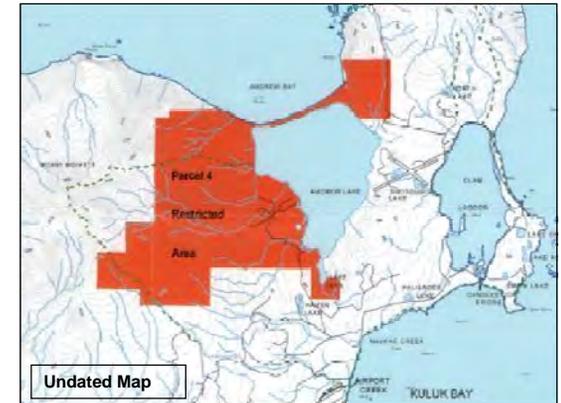
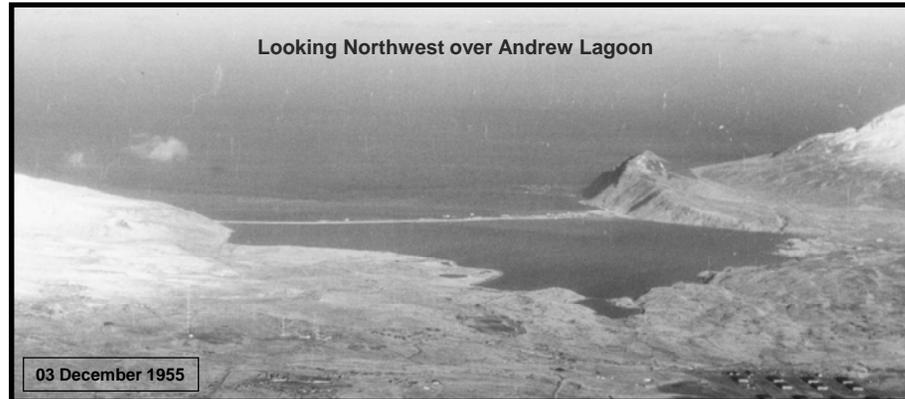


Overlap between adjacent photographs





## HISTORICAL REVIEW



### Historical Summary of Northern Adak

Situated near the center of the Aleutian chain, Adak Island is the largest of the Andreanof Islands and comprises approximately 180,000 acres. The Naval Air Facility (NAF) Adak occupies the northern portion of the island and about 76,800 acres.

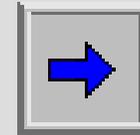
Since the early 1940s, the northern half of Adak Island has been used for military operations. In June 1942, the Japanese attacked and occupied Attu and Kiska Islands. To mount operations against the Japanese, the U.S. forces established a base as a staging area near Attu and Kiska. The Joint Chiefs of Staff chose Adak for its harbor in the Western Aleutians. On August 30, 1942, the U.S. forces landed on Adak and construction began immediately to build the airfield and installation. Beginning September 14, 1942, U.S. forces departed Adak and bombed the Japanese whenever weather permitted. One year later, the military population at Adak grew to 90,000. During 1944, Adak grew in size and importance, although most of the combat troops had been transferred to Attu. Adak became the headquarters of the 17th Naval District in 1944 when it was created. After the war, the Navy maintained Adak and assumed all facilities when the U.S. Air Force withdrew in 1950. The Naval Air Facility (NAF) Adak was closed on March 31, 1997.



# PHOTOGRAPHIC ANALYSIS



## Photo Interpretation Of Aerial Photography



Andrew Lake  
Seawall

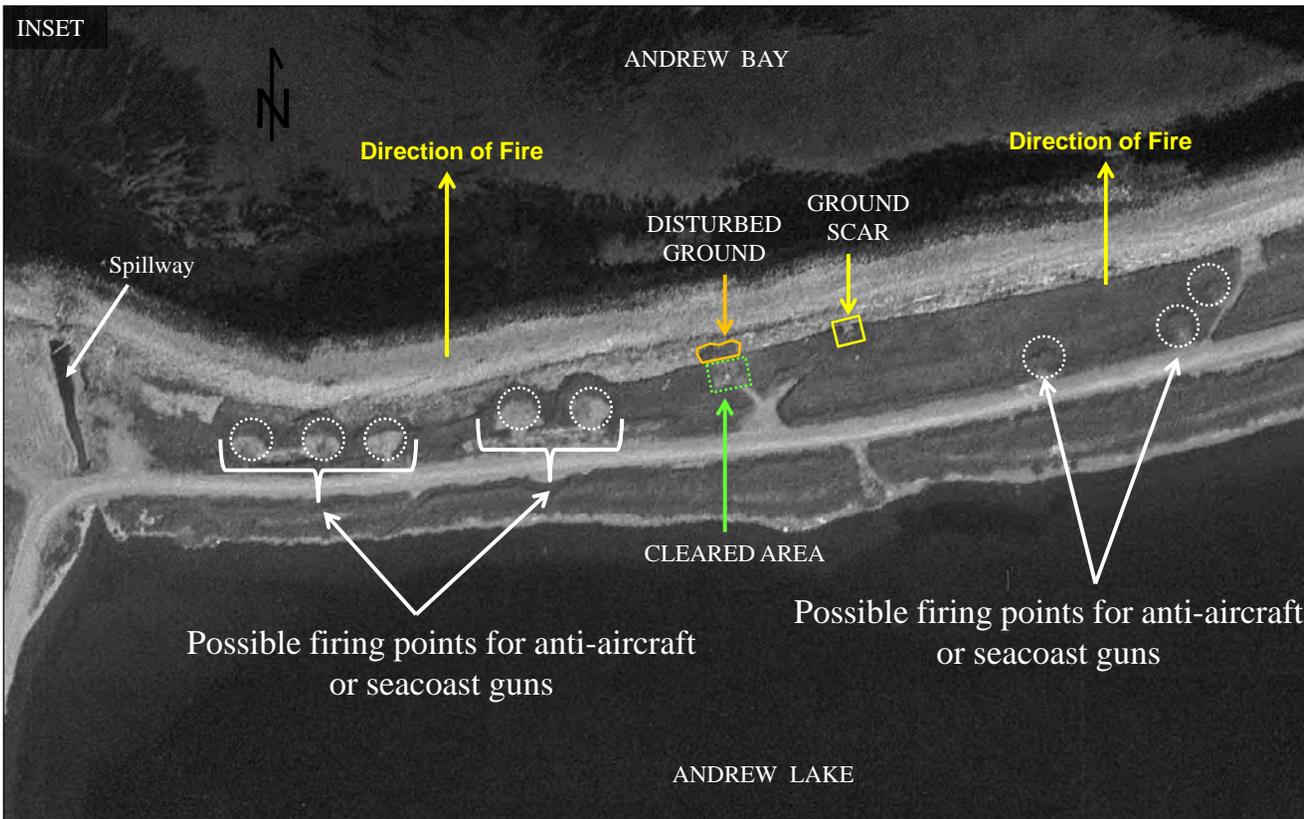
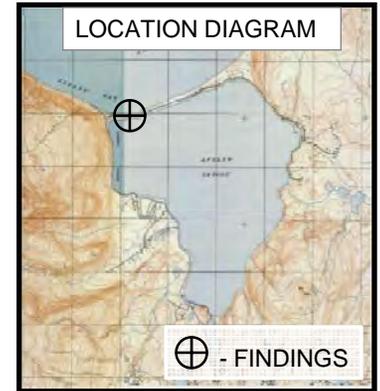
 Selected findings from the aerial photographic analysis.



# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL



INSET: ANDREW LAKE SEAWALL WEST SECTION - 20 JULY 1951

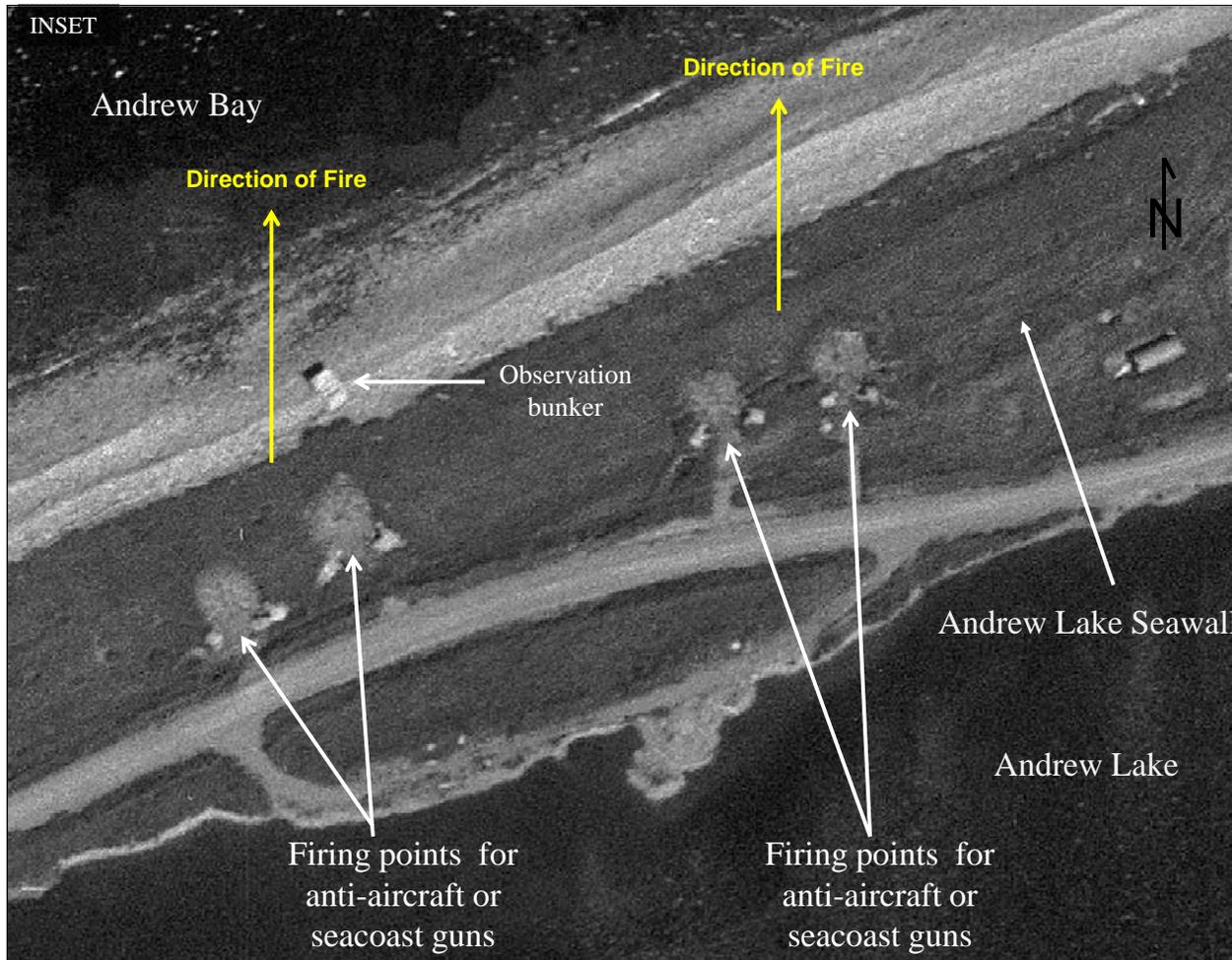




# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL



INSET: ANDREW LAKE SEAWALL CENTRAL SECTION - 20 JULY 1951





# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL



## NORTHERN ADAK: ANDREW LAKE SEAWALL CENTRAL SECTION

ANDREW LAKE SEAWALL SECTION  
20 JULY 1951, 25 OCTOBER 1987, AND 25 MAY 2006





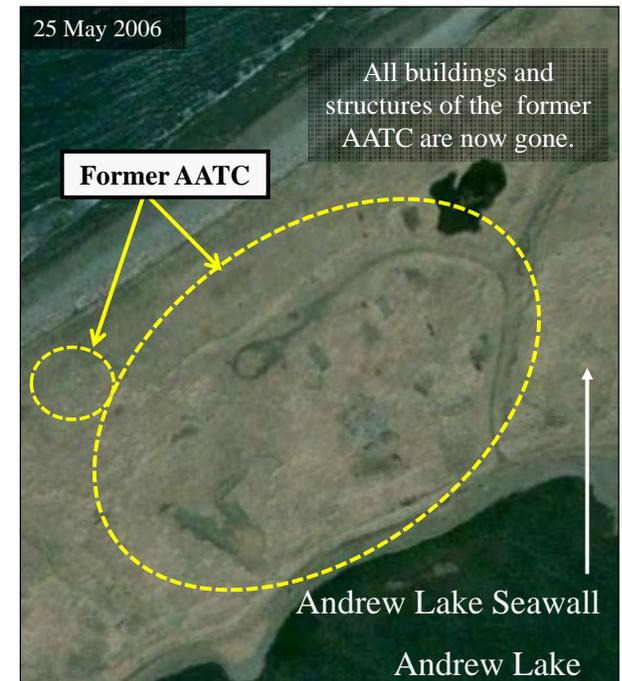
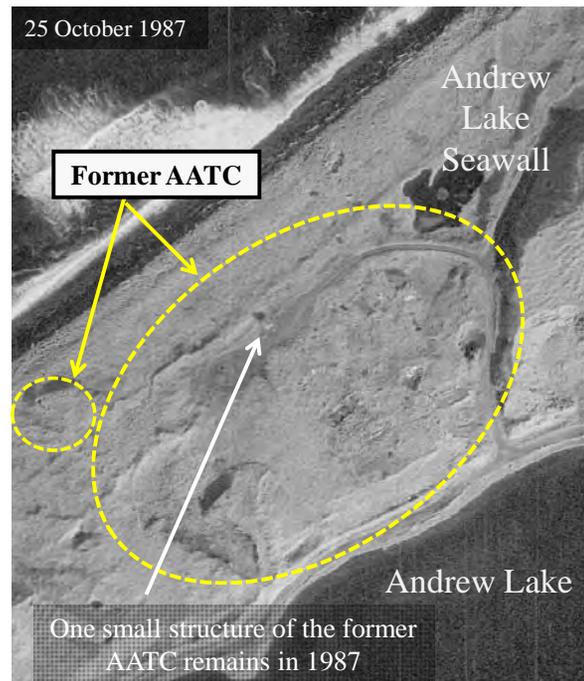
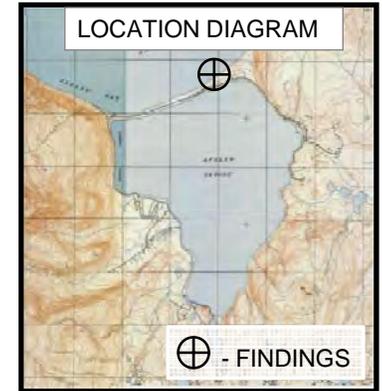


# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHEAST LAGOON ADJACENT TO SEAWALL

EAST SEAWALL – ANTI-AIRCRAFT TRAINING CENTER (AATC) RANGE  
1951, 1987, AND 2006

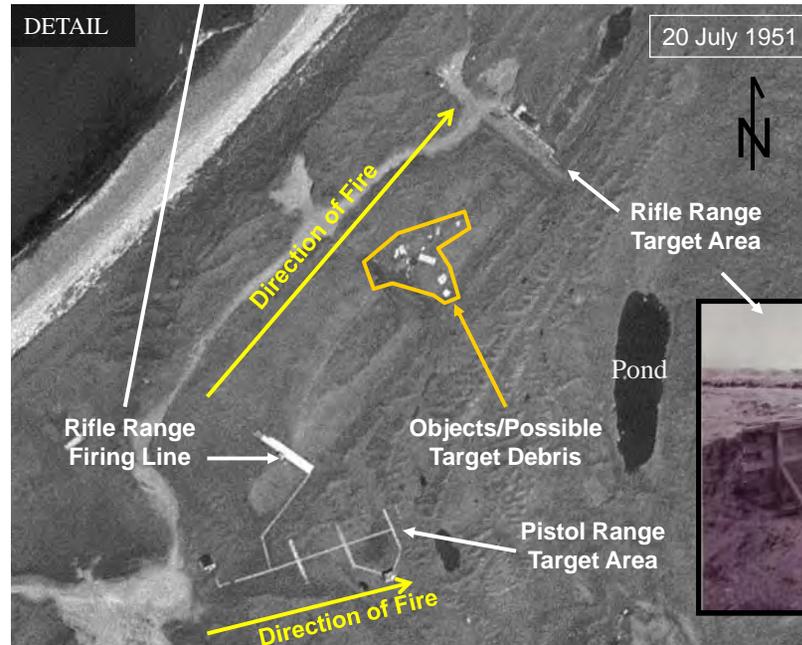
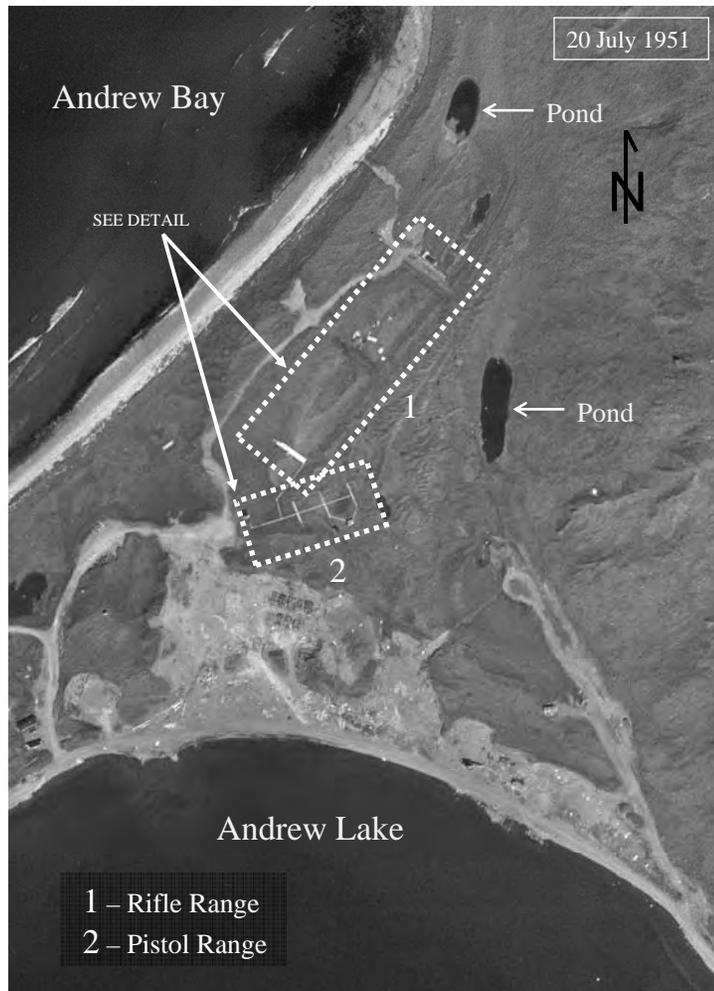
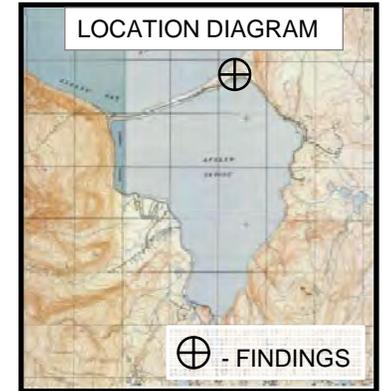




# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHEAST LAGOON ADJACENT TO SEAWALL - PISTOL AND RIFLE RANGES 1951 AERIAL PHOTOGRAPH, 1944 STILL PHOTOGRAPHS



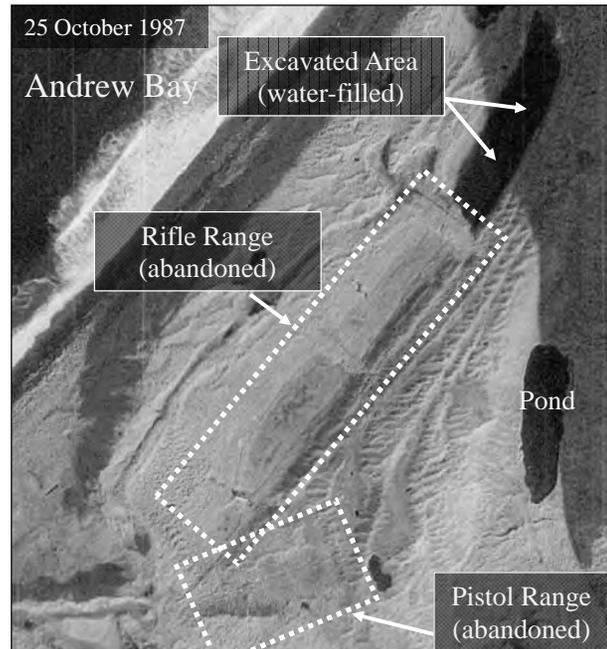
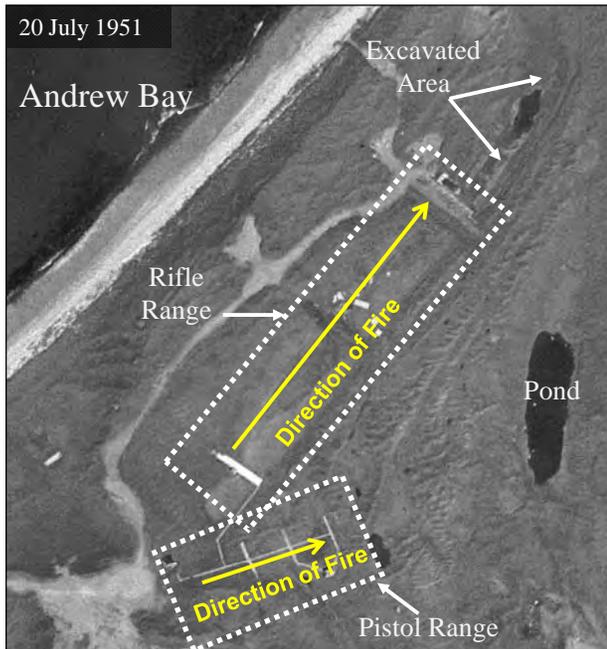
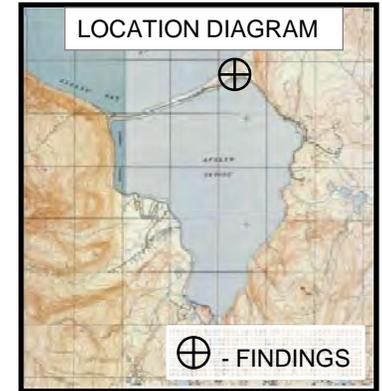


# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHEAST LAGOON ADJACENT TO SEAWALL

RIFLE RANGE AND PISTOL RANGE  
20 JULY 1951, 25 OCTOBER 1987, AND 25 MAY 2006



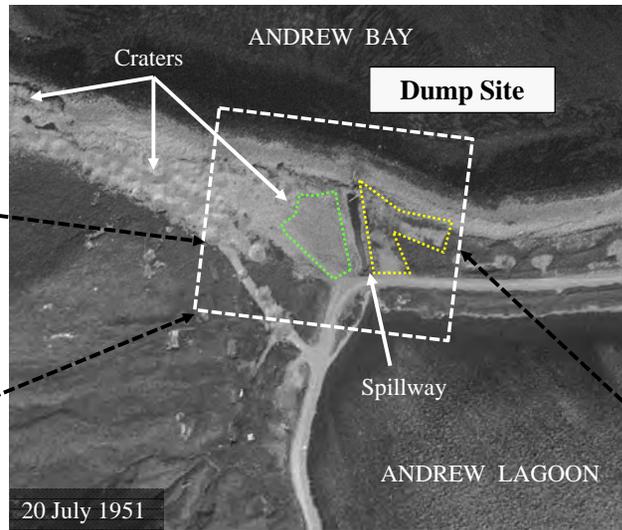


# PHOTOGRAPHIC ANALYSIS – SEAWALL

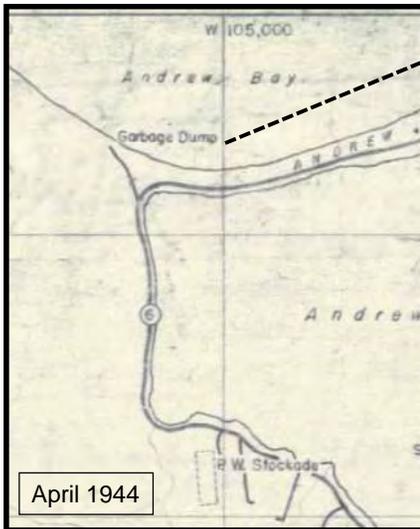
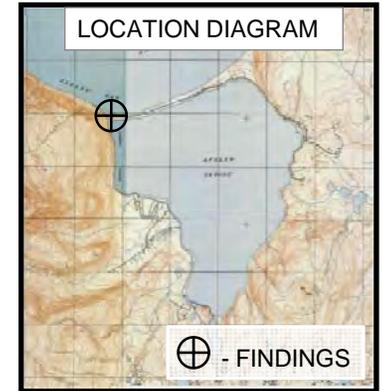
## WEST SEAWALL - PROBABLE DUMP SITE 1951 AERIAL AND 1966-1967 STILL PHOTOGRAPHS, AND 1944 MAPS



Navycthistory.com (posted by Adak veteran based at Adak in June 1966-June 1967.

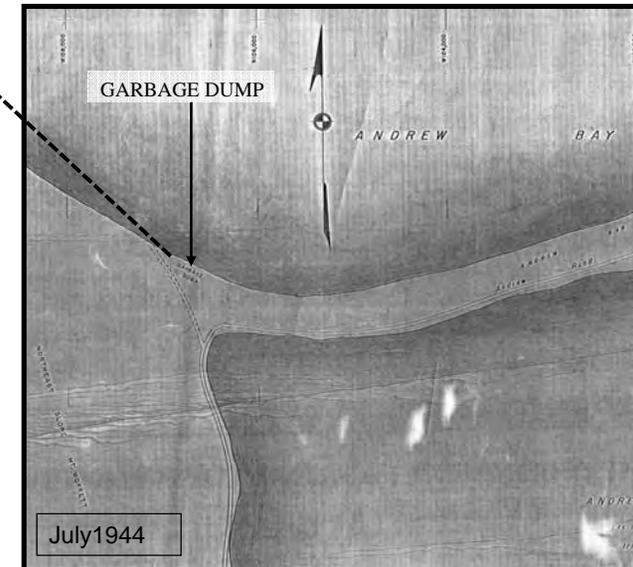


20 July 1951



April 1944

The dashed box signifies the approximate vicinity of the dumping ground based on the cleared area and ground scars found in the above 1951 photograph. April 1944 and July 1944 maps declare the area, but not the boundary of the garbage dump.



July 1944



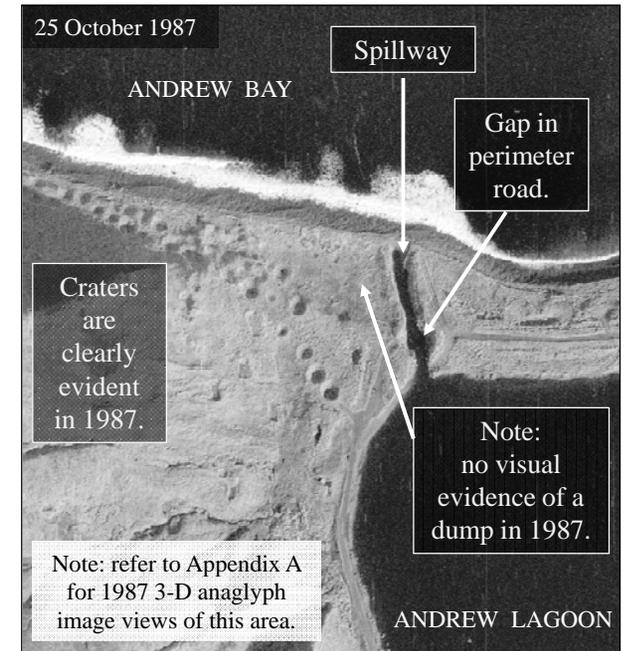
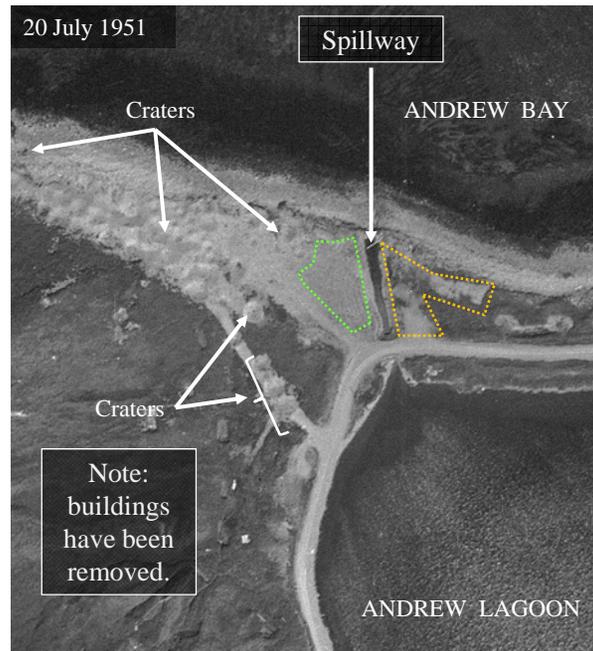
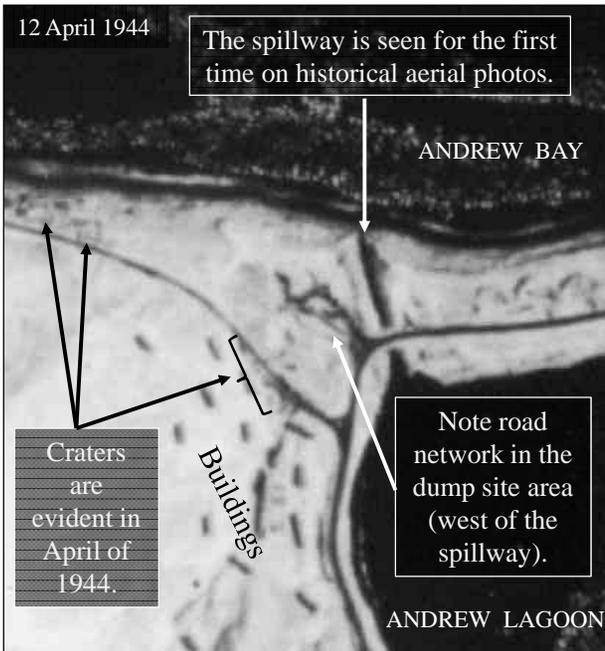
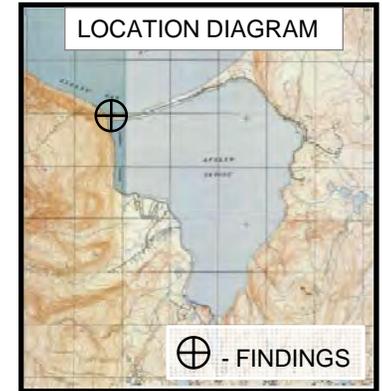
# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHERN ADAK: ANDREW LAKE SEAWALL SECTION

### WEST SEAWALL - PROBABLE DUMP SITE

12 APRIL 1944, 20 JULY 1951, AND 25 OCTOBER 1987





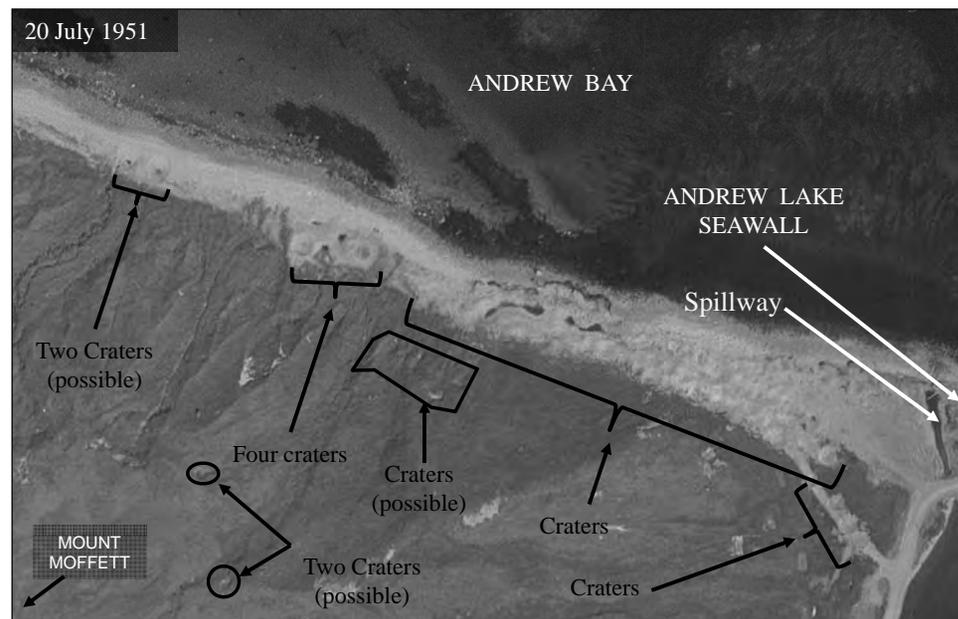
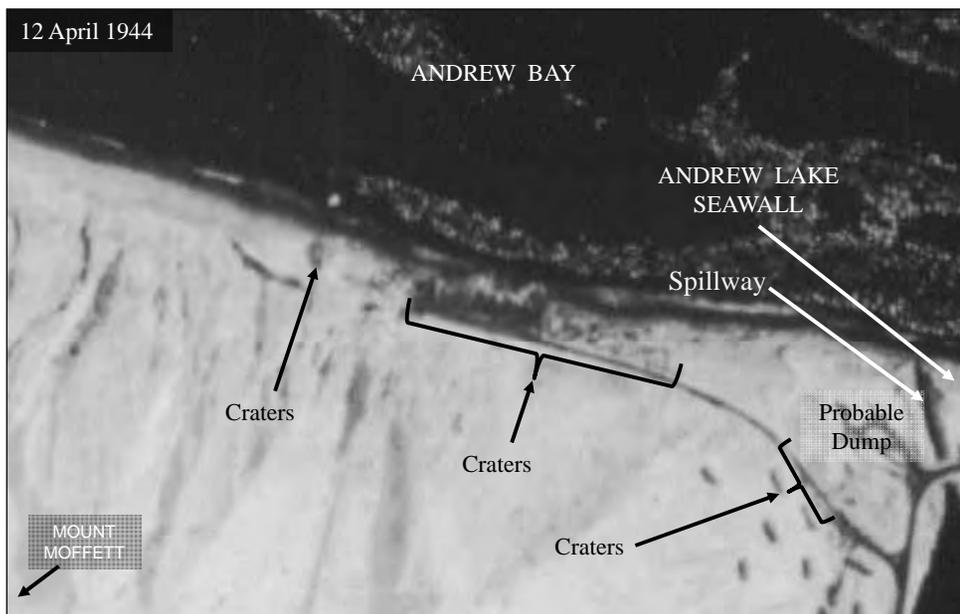
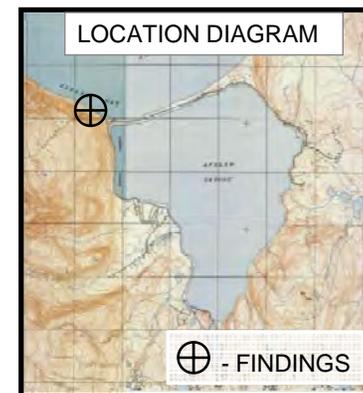
# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHERN ADAK: ANDREW LAKE SEAWALL SECTION

### WEST SEAWALL & SHORELINE AREA – CRATERS 12 APRIL 1944 AND 20 JULY 1951

Craters are evident just west of the seawall area as early as April of 1944. Due to limits of image scale, resolution, seasonal variations, and sun angle, not all craters are visible on the available aerial photography.

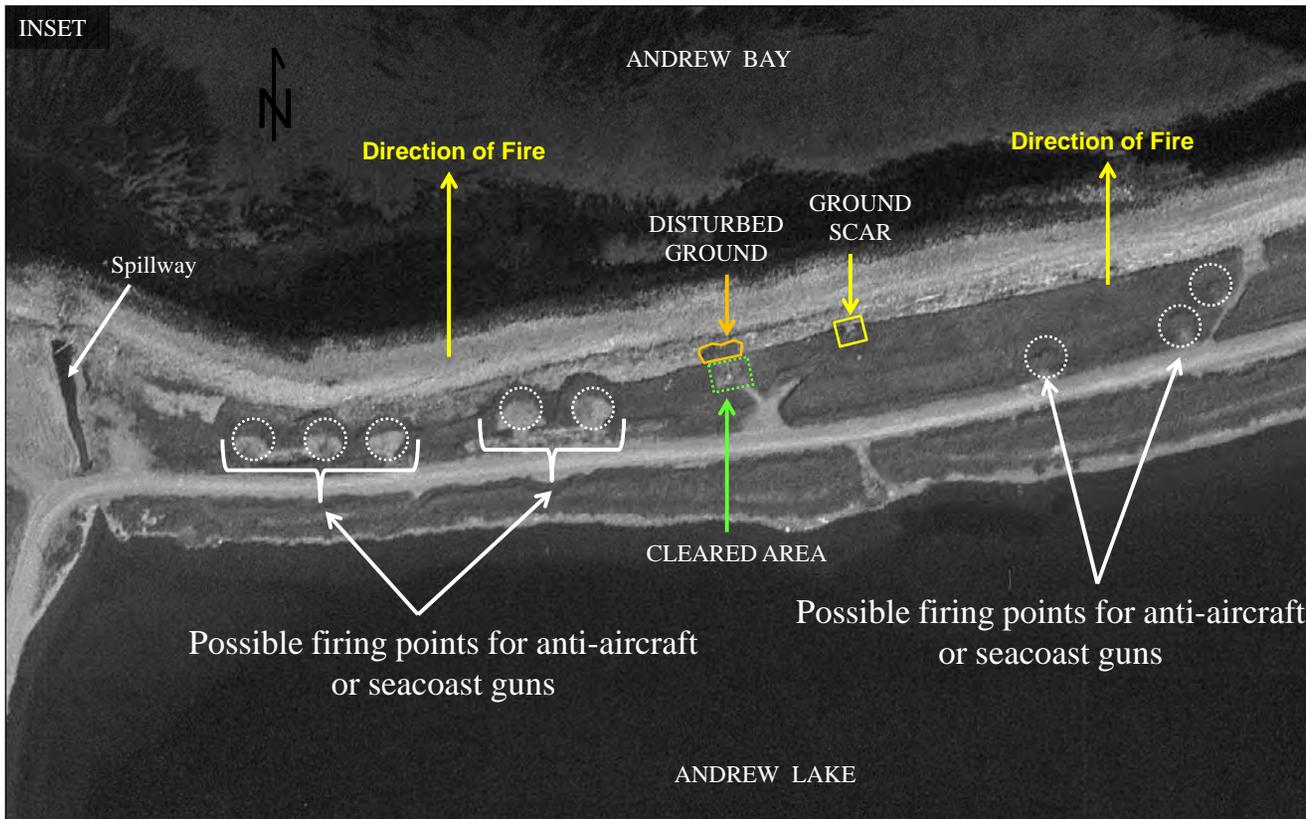
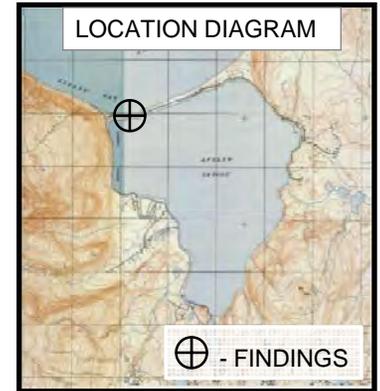




# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL



INSET: ANDREW LAKE SEAWALL WEST SECTION - 20 JULY 1951

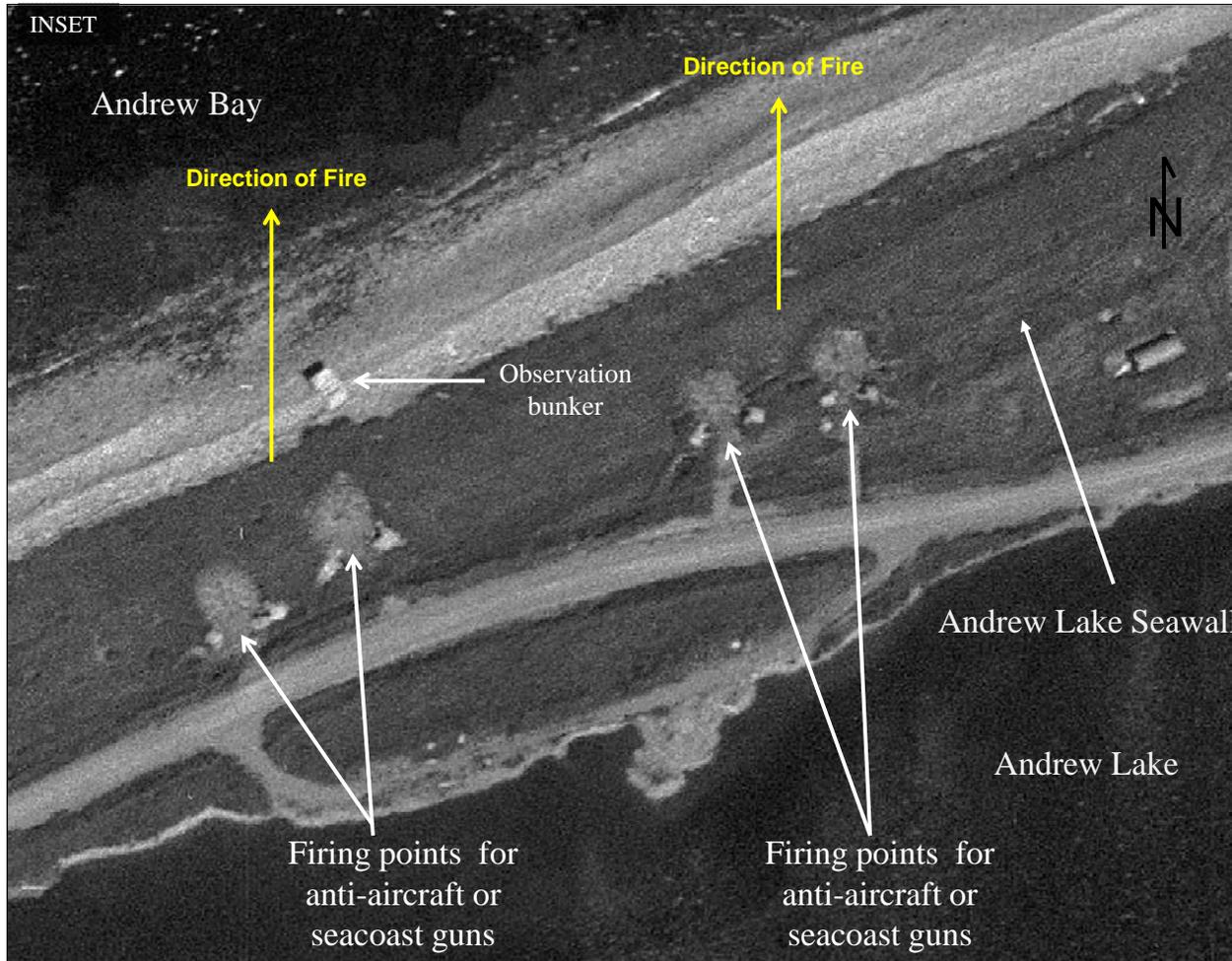




# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL



INSET: ANDREW LAKE SEAWALL CENTRAL SECTION - 20 JULY 1951

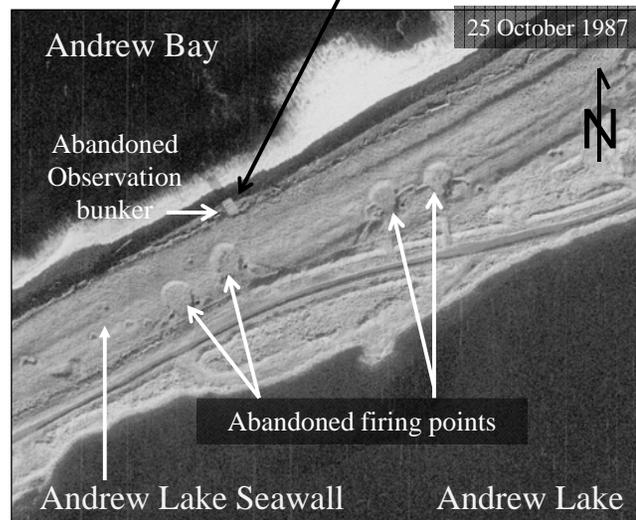




# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL

## NORTHERN ADAK: ANDREW LAKE SEAWALL CENTRAL SECTION

ANDREW LAKE SEAWALL SECTION  
20 JULY 1951, 25 OCTOBER 1987, AND 25 MAY 2006

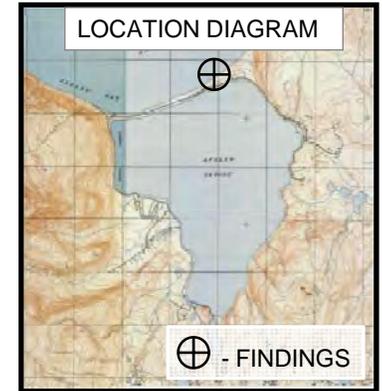
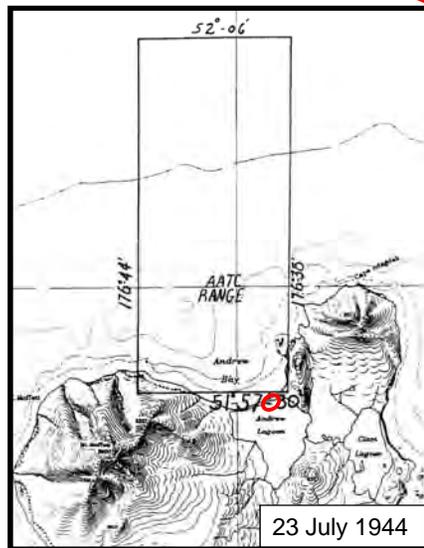
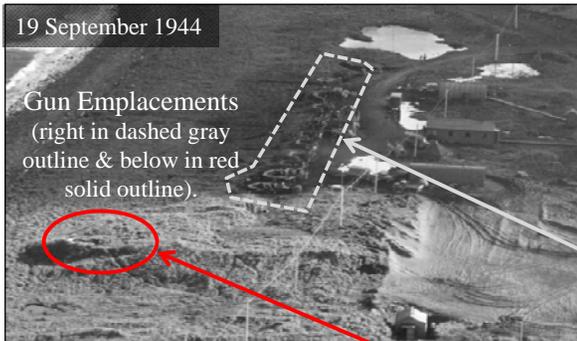




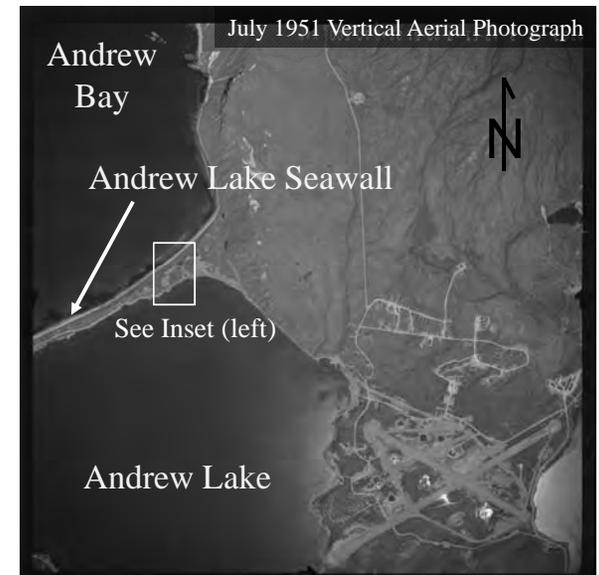
# PHOTOGRAPHIC ANALYSIS - ANDREW LAKE SEAWALL



## EAST SEAWALL – ANTI-AIRCRAFT TRAINING CENTER (AATC) RANGE 1944 AERIAL OBLIQUE PHOTO, 1944 MAP, AND 1951 VERTICAL AERIAL PHOTO



AATC



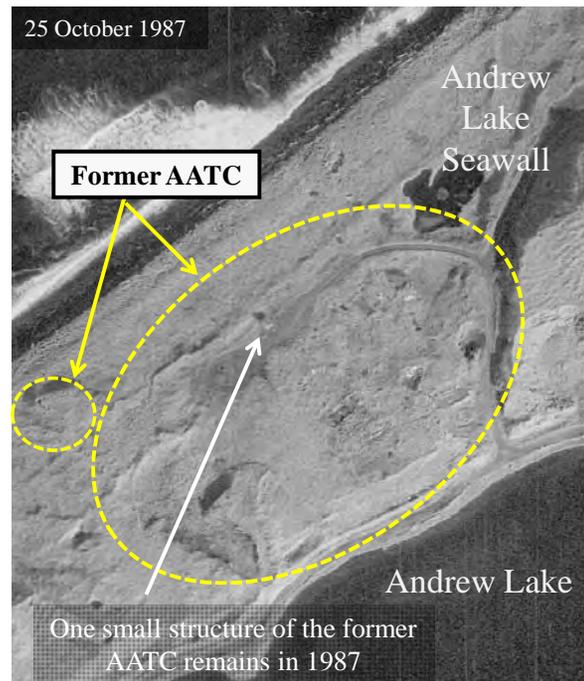
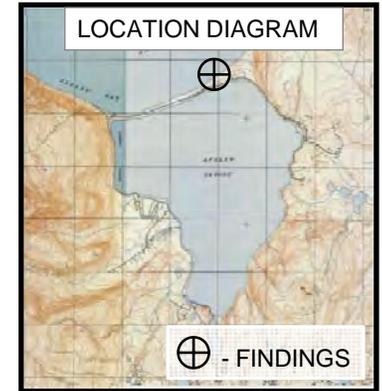


# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHEAST LAGOON ADJACENT TO SEAWALL

EAST SEAWALL – ANTI-AIRCRAFT TRAINING CENTER (AATC) RANGE  
1951, 1987, AND 2006

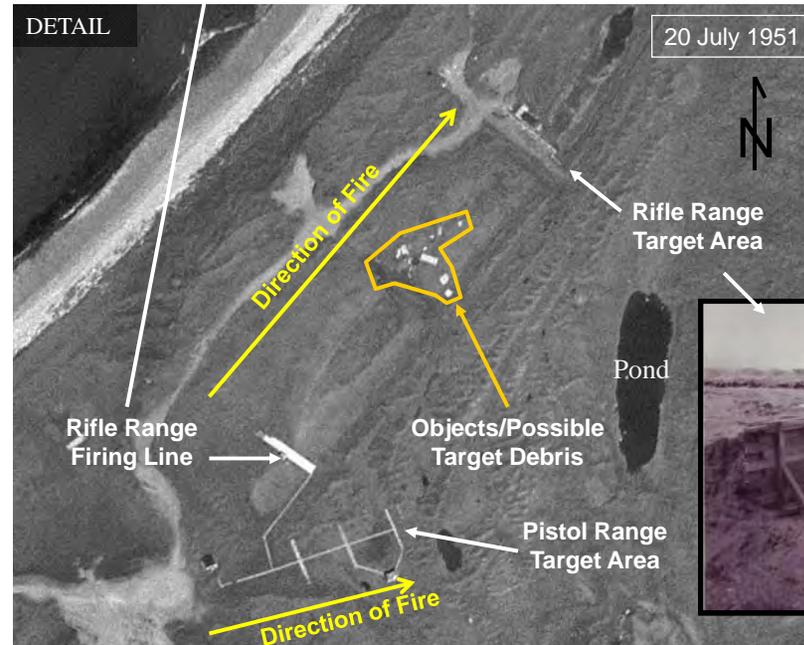
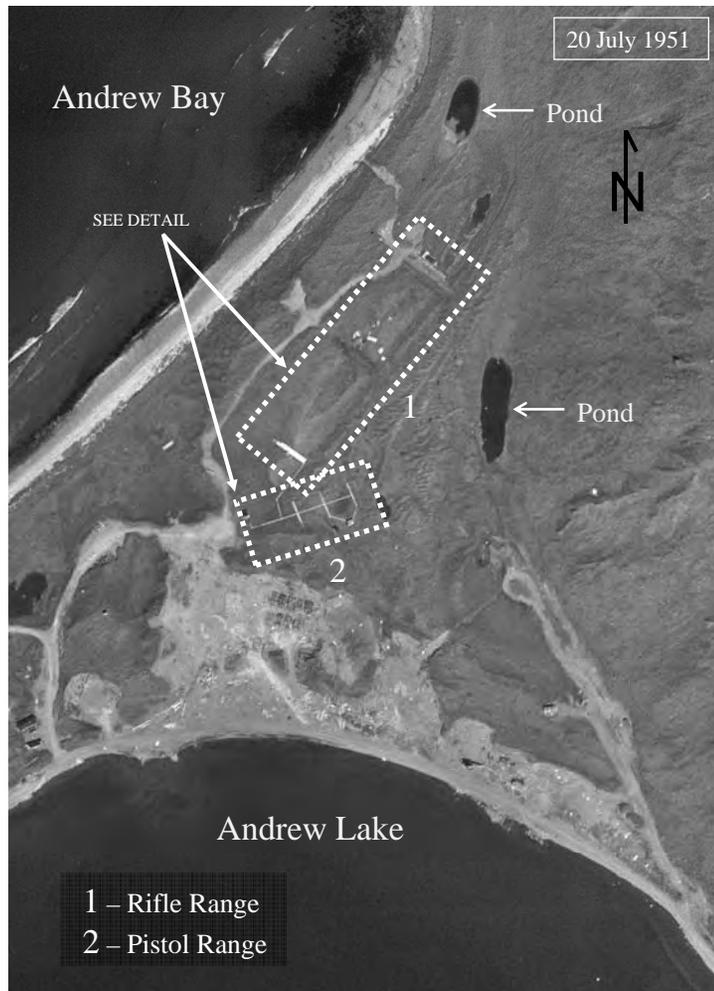
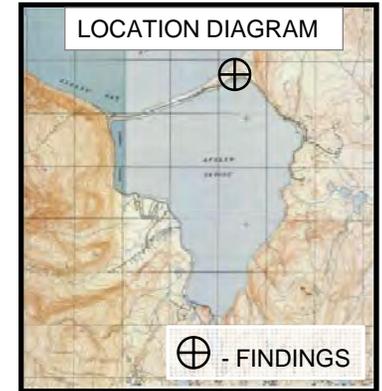




# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHEAST LAGOON ADJACENT TO SEAWALL - PISTOL AND RIFLE RANGES 1951 AERIAL PHOTOGRAPH, 1944 STILL PHOTOGRAPHS



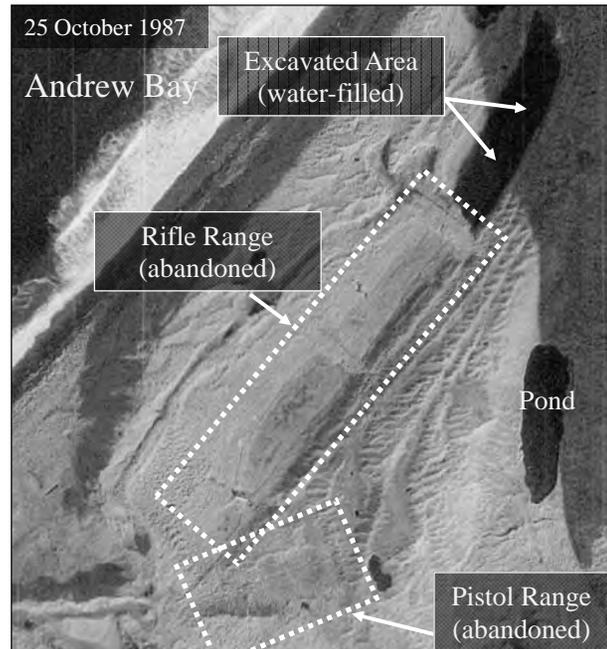
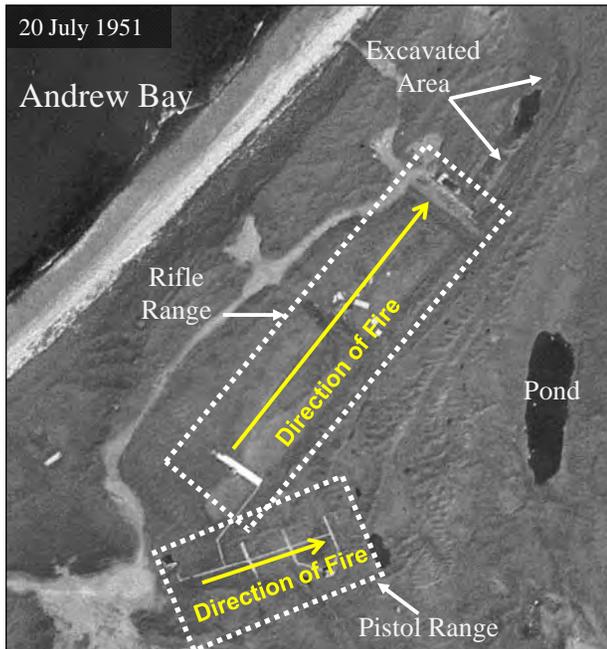
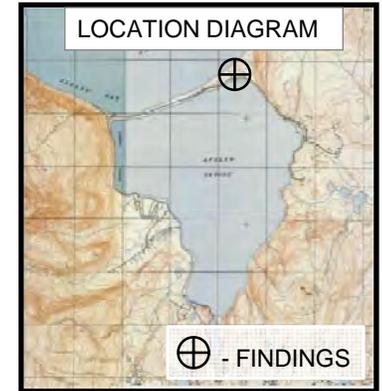


# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHEAST LAGOON ADJACENT TO SEAWALL

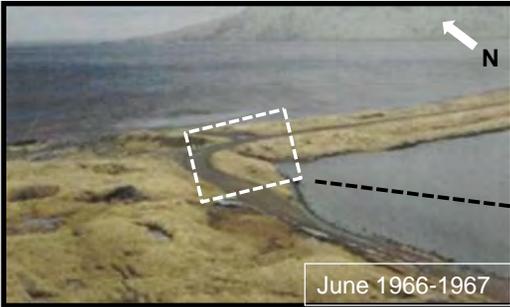
RIFLE RANGE AND PISTOL RANGE  
20 JULY 1951, 25 OCTOBER 1987, AND 25 MAY 2006



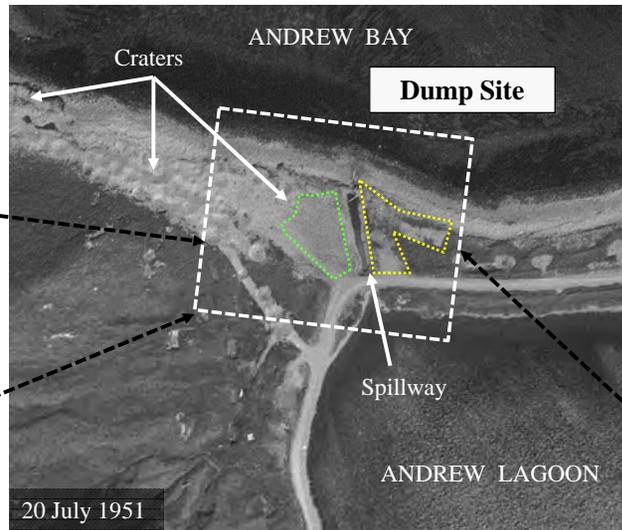


# PHOTOGRAPHIC ANALYSIS – SEAWALL

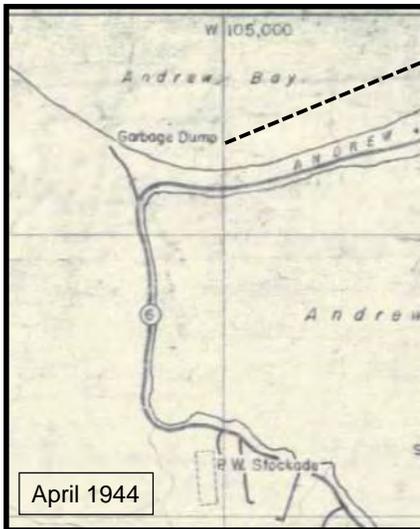
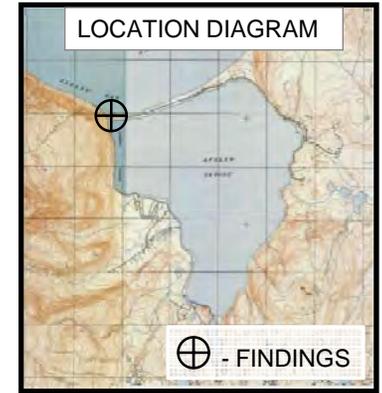
## WEST SEAWALL - PROBABLE DUMP SITE 1951 AERIAL AND 1966-1967 STILL PHOTOGRAPHS, AND 1944 MAPS



Navycthistory.com (posted by Adak veteran based at Adak in June 1966-June 1967.

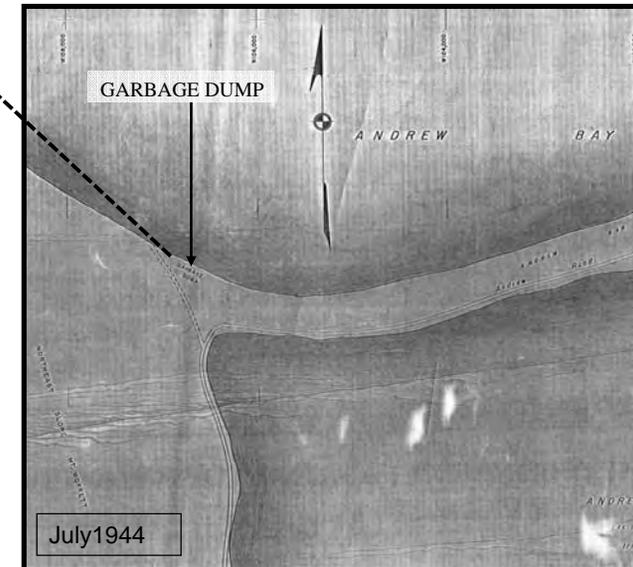


20 July 1951



April 1944

The dashed box signifies the approximate vicinity of the dumping ground based on the cleared area and ground scars found in the above 1951 photograph. April 1944 and July 1944 maps declare the area, but not the boundary of the garbage dump.



July 1944



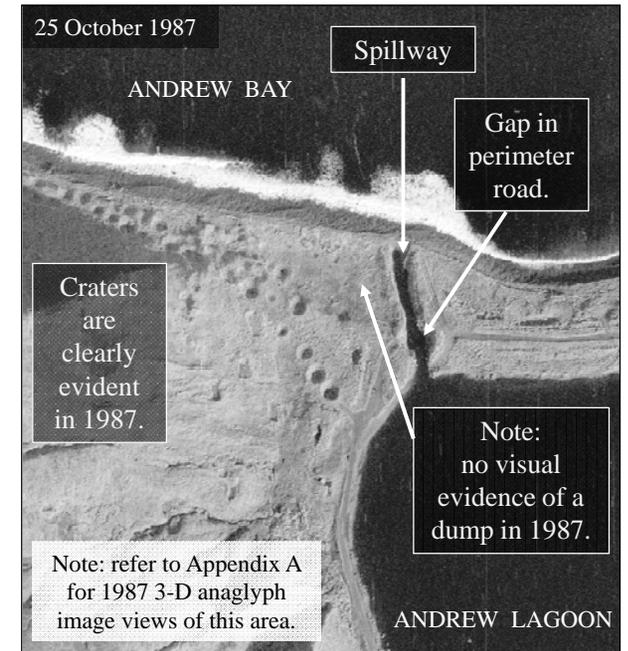
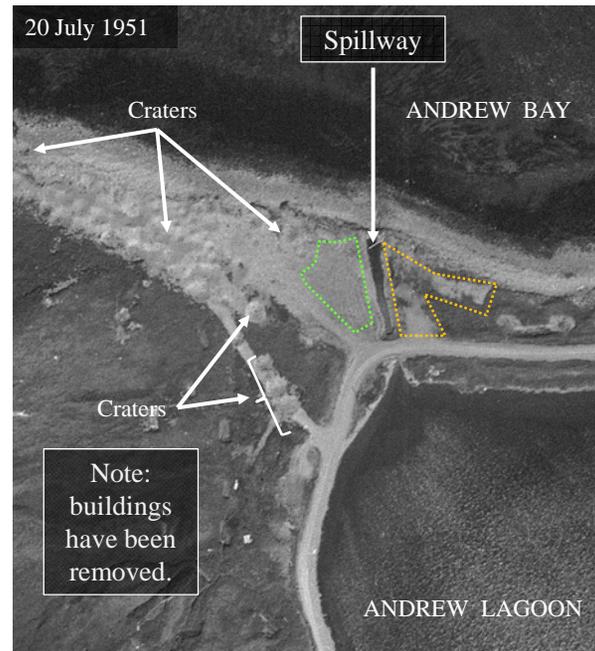
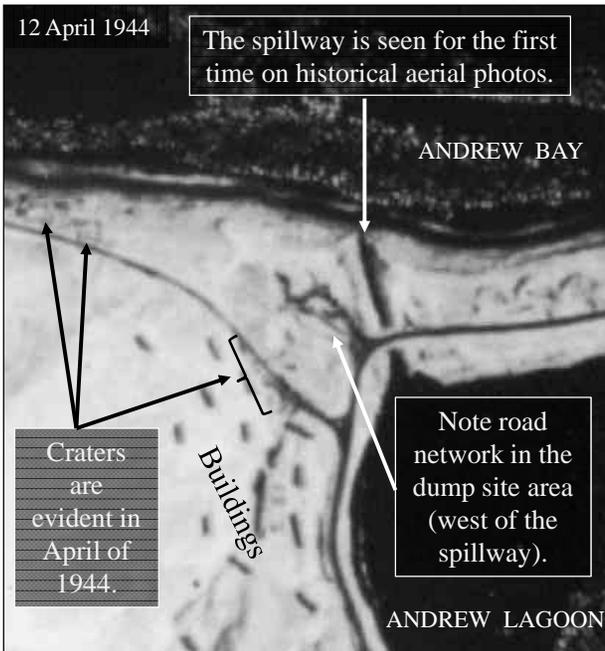
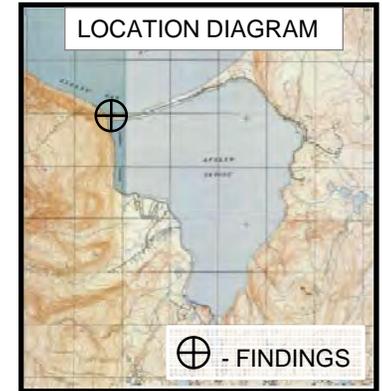
# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHERN ADAK: ANDREW LAKE SEAWALL SECTION

### WEST SEAWALL - PROBABLE DUMP SITE

12 APRIL 1944, 20 JULY 1951, AND 25 OCTOBER 1987





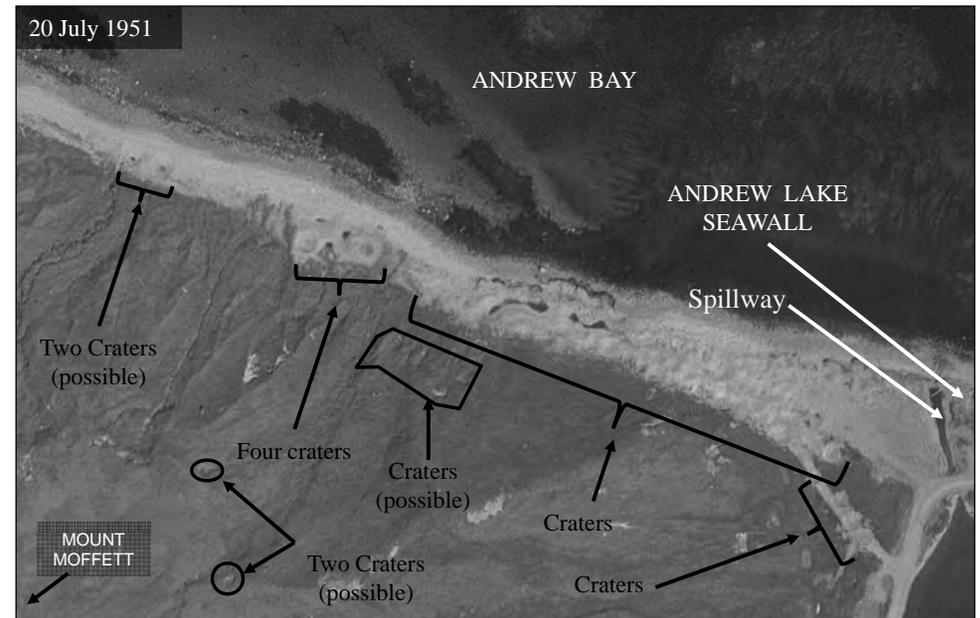
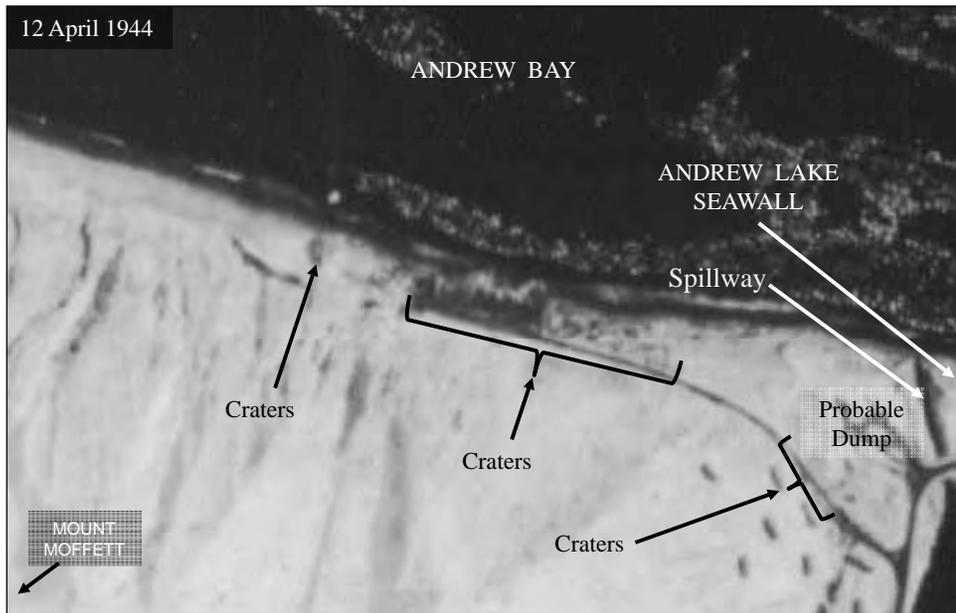
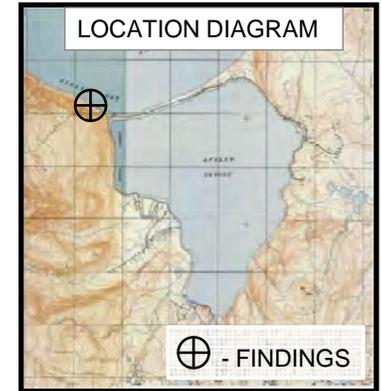
# PHOTOGRAPHIC ANALYSIS – ANDREW LAKE SEAWALL



## NORTHERN ADAK: ANDREW LAKE SEAWALL SECTION

### WEST SEAWALL & SHORELINE AREA – CRATERS 12 APRIL 1944 AND 20 JULY 1951

Craters are evident just west of the seawall area as early as April of 1944. Due to limits of image scale, resolution, seasonal variations, and sun angle, not all craters are visible on the available aerial photography.





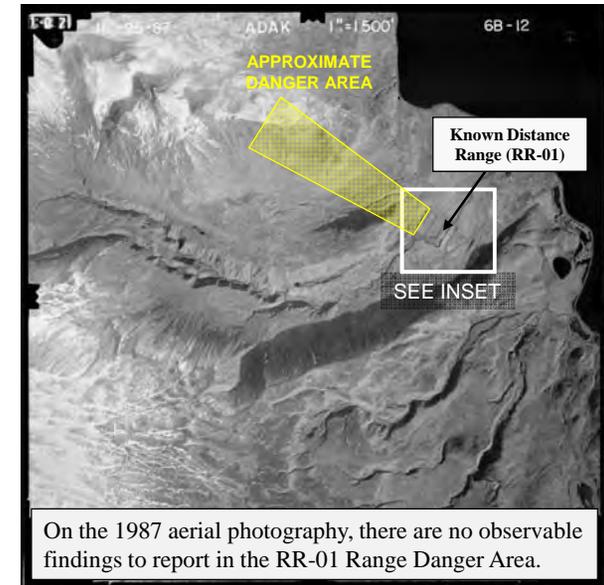
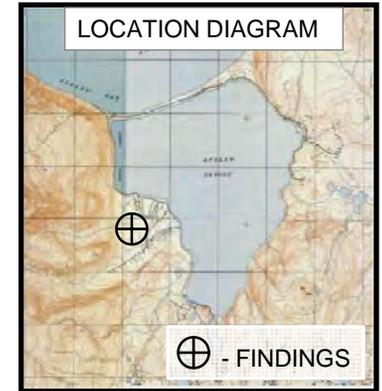
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY - KNOWN DISTANCE RANGE (RR-01) 1987 AERIAL PHOTOGRAPHY



Note: No significant changes to the Known Distance Range compared to July 1951 aerial coverage.

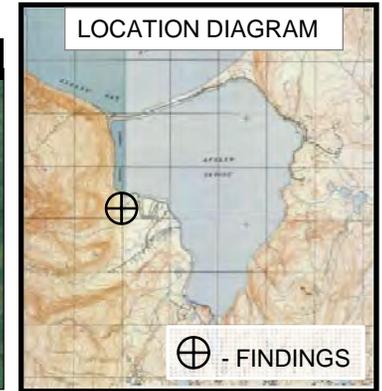
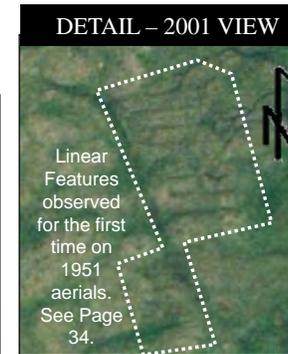
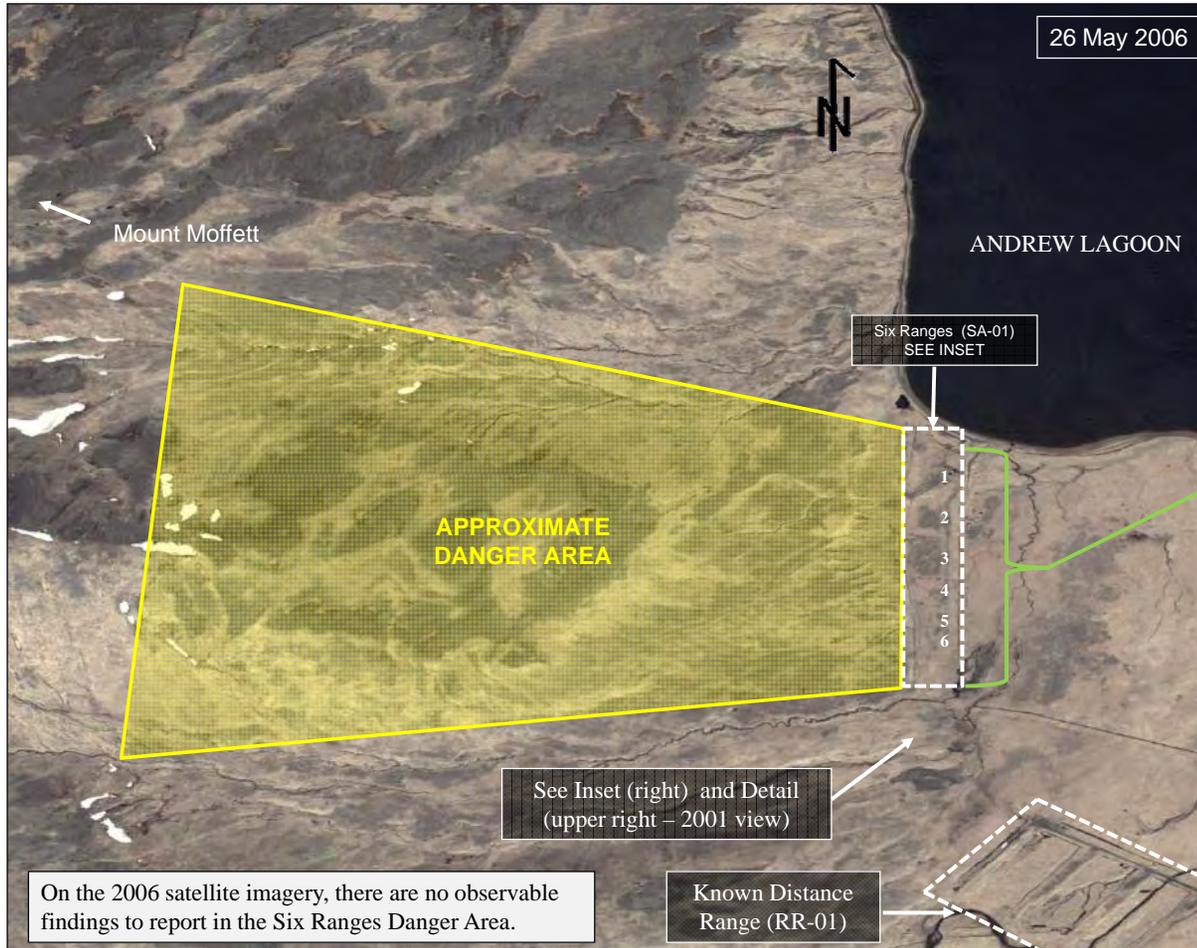




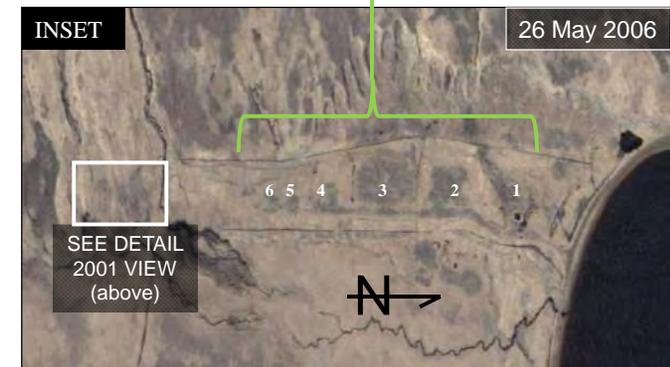
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY - SIX RANGES (SA-01) 2006 SATELLITE IMAGERY & 2001 DETAIL VIEW



1. Pistol Range
2. 1000" Machine Gun Range
3. 1000" Landscape and Small Bore Range
4. 1000" Anti-Tank Range, Cal. 22
5. 1000" Anti-Aircraft Range, Cal. 22
6. Sub-Machine Gun Range

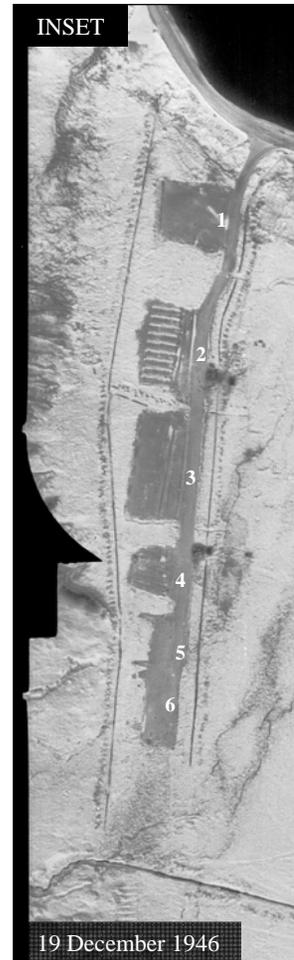
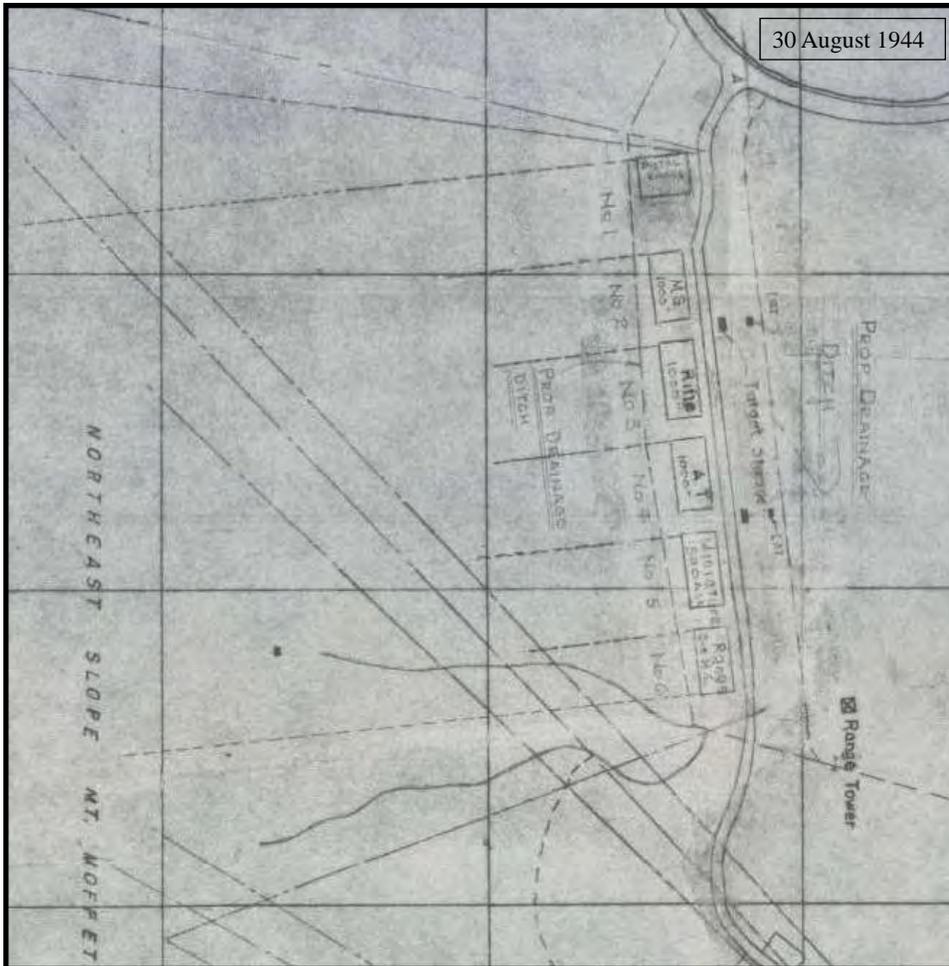




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY - SIX RANGES (SA-01) 1944 MAP AND 1946 AERIAL PHOTOGRAPHY



1. Pistol Range
2. 1000' Machine Gun Range
3. 1000' Landscape and Small Bore Range
4. 1000' Anti-Tank Range, Cal. 22
5. 1000' Anti-Aircraft Range, Cal. 22
6. Sub-Machine Gun Range

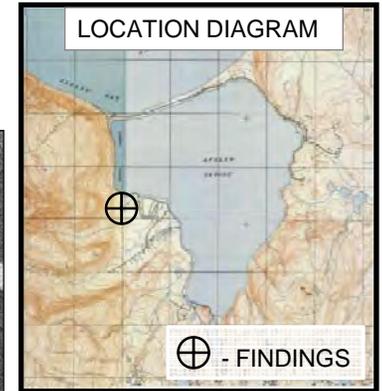
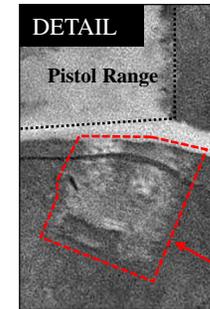
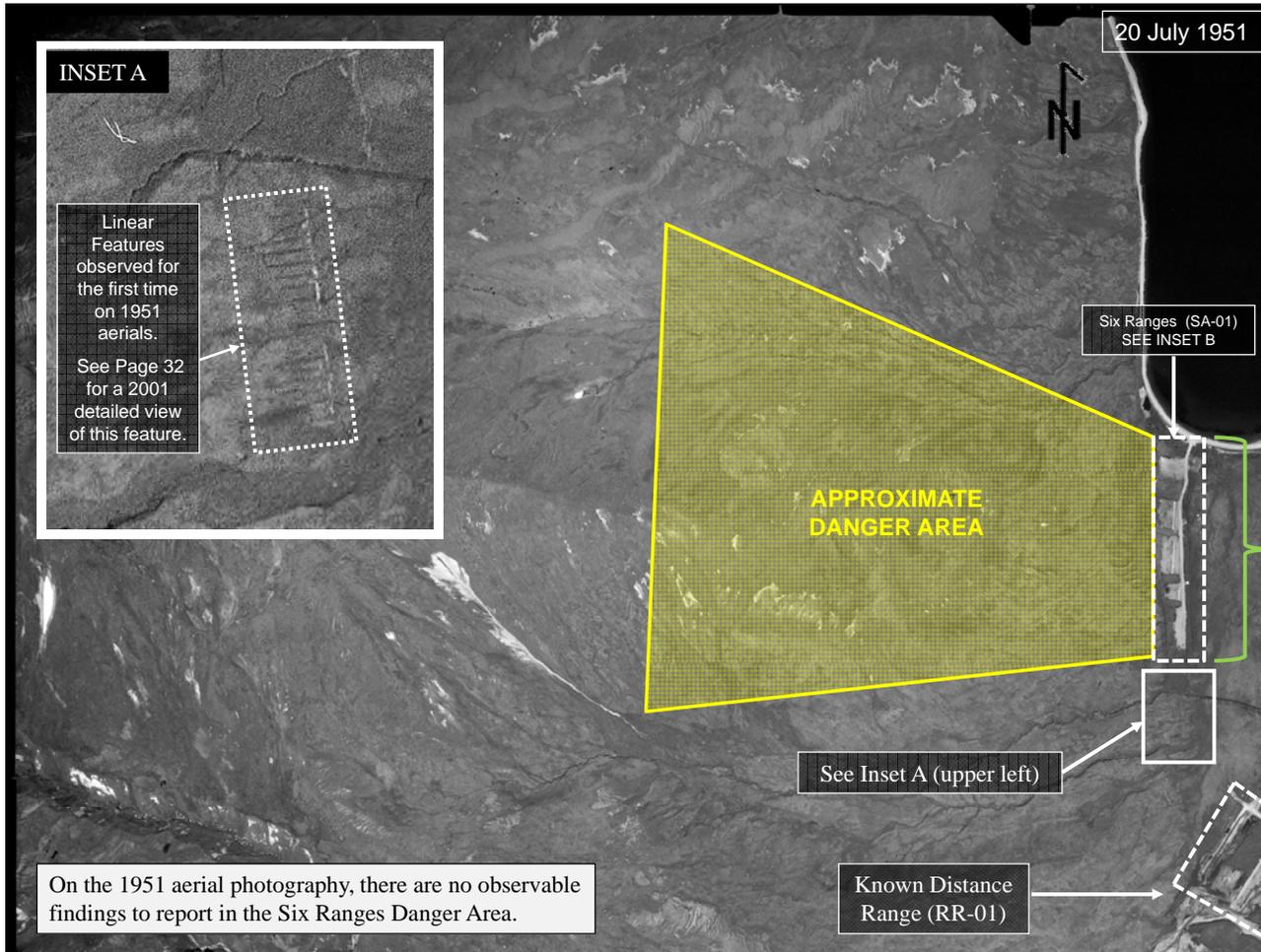




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY - SIX RANGES (SA-01) 1951 AERIAL PHOTOGRAPHY



New developed area.

1. Pistol Range
2. 1000" Machine Gun Range
3. 1000" Landscape and Small Bore Range
4. 1000" Anti-Tank Range, Cal. 22
5. 1000" Anti-Aircraft Range, Cal. 22
6. Sub-Machine Gun Range

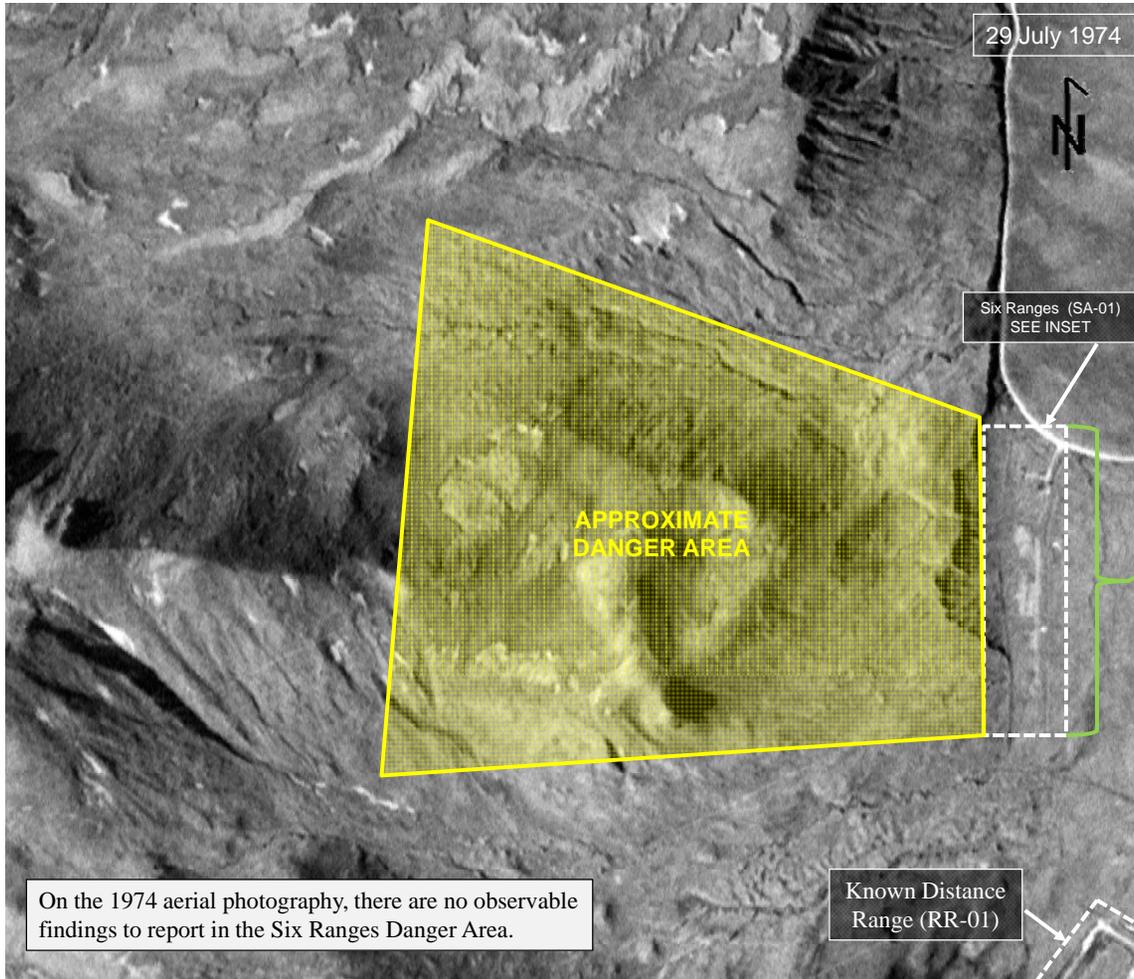




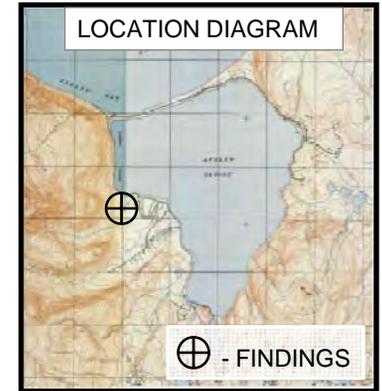
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



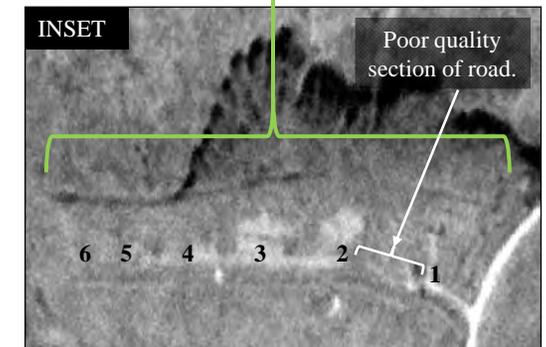
## MOFFETT VALLEY - SIX RANGES (SA-01) 1974 AERIAL PHOTOGRAPHY



Note: the six ranges appear to be abandoned. The road running parallel to the range area appears to be in disrepair. Also, visual signatures of the actual ranges appear somewhat weak.



1. Pistol Range
2. 1000" Machine Gun Range
3. 1000" Landscape and Small Bore Range
4. 1000" Anti-Tank Range, Cal. 22
5. 1000" Anti-Aircraft Range, Cal. 22
6. Sub-Machine Gun Range

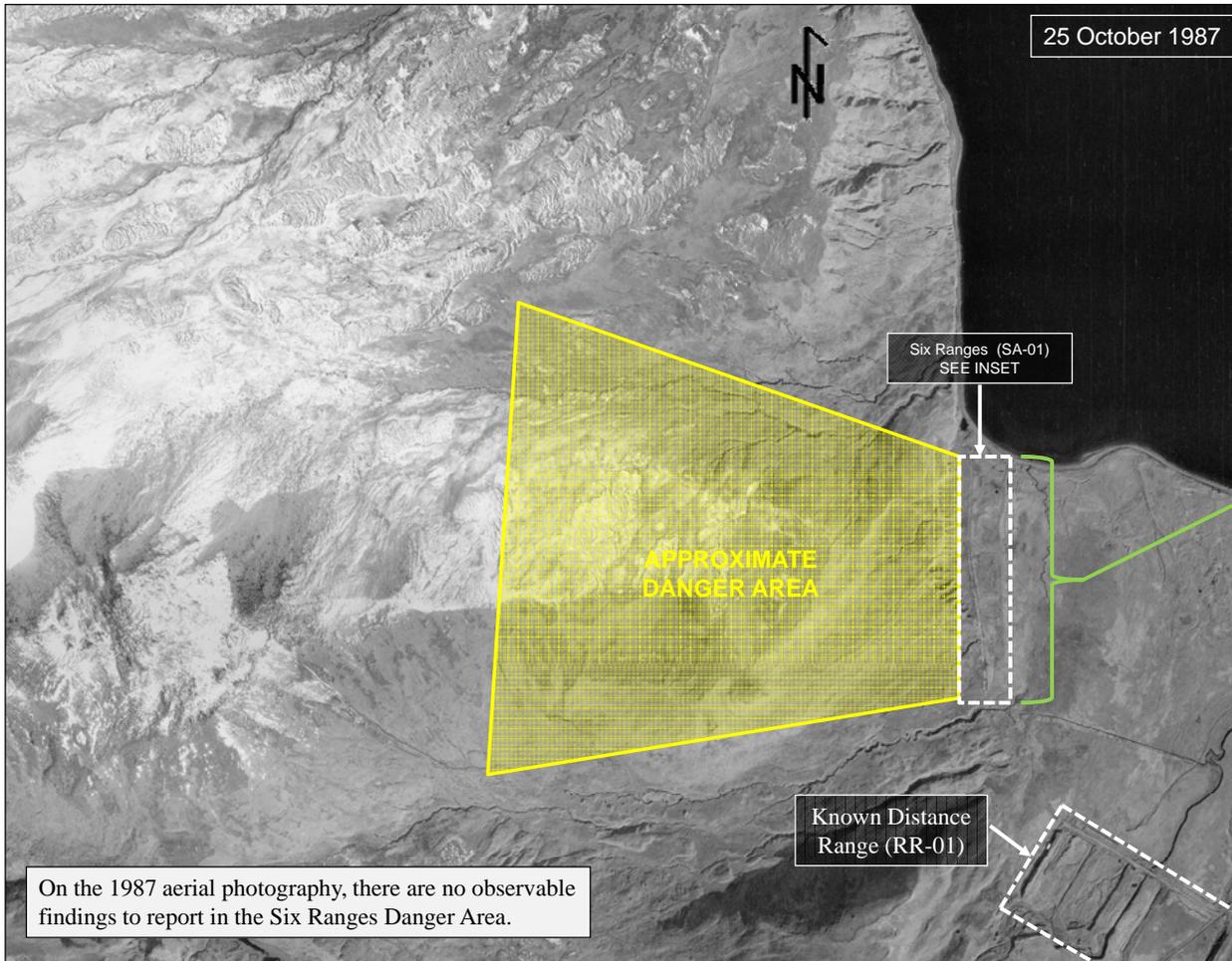




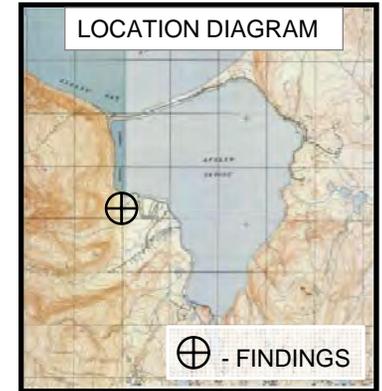
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



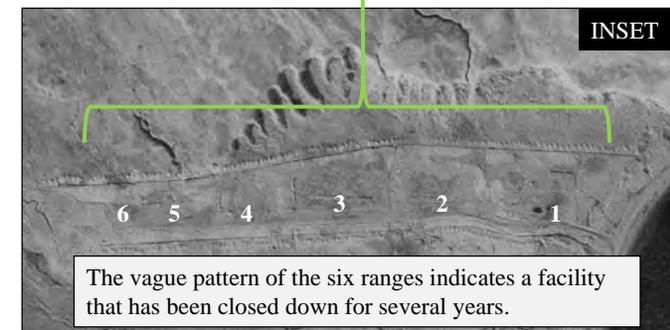
## MOFFETT VALLEY - SIX RANGES (SA-01) 1987 AERIAL PHOTOGRAPHY



Note: the six ranges appear to have been abandoned for several years. The signature of the six ranges appears very weak on the 1987 aerials.



1. Pistol Range
2. 1000" Machine Gun Range
3. 1000" Landscape and Small Bore Range
4. 1000" Anti-Tank Range, Cal. 22
5. 1000" Anti-Aircraft Range, Cal. 22
6. Sub-Machine Gun Range



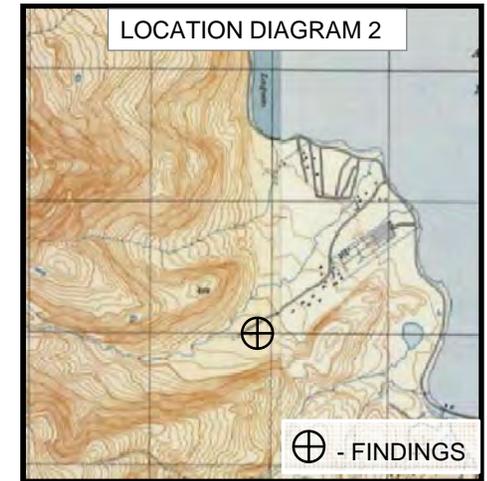
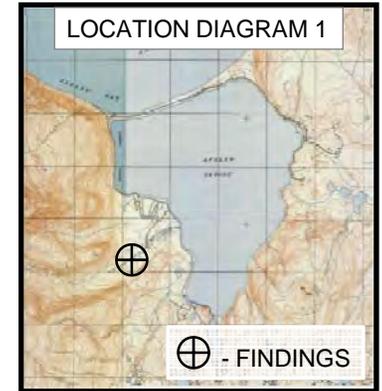
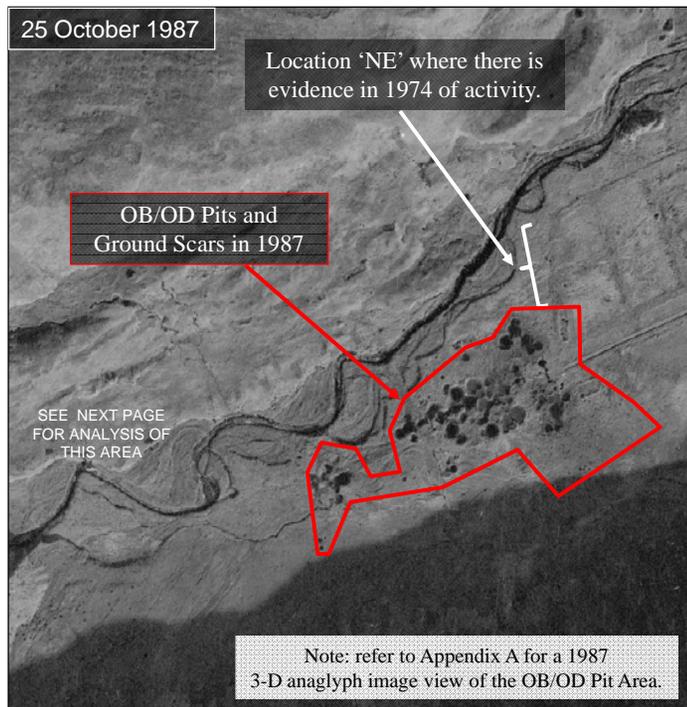
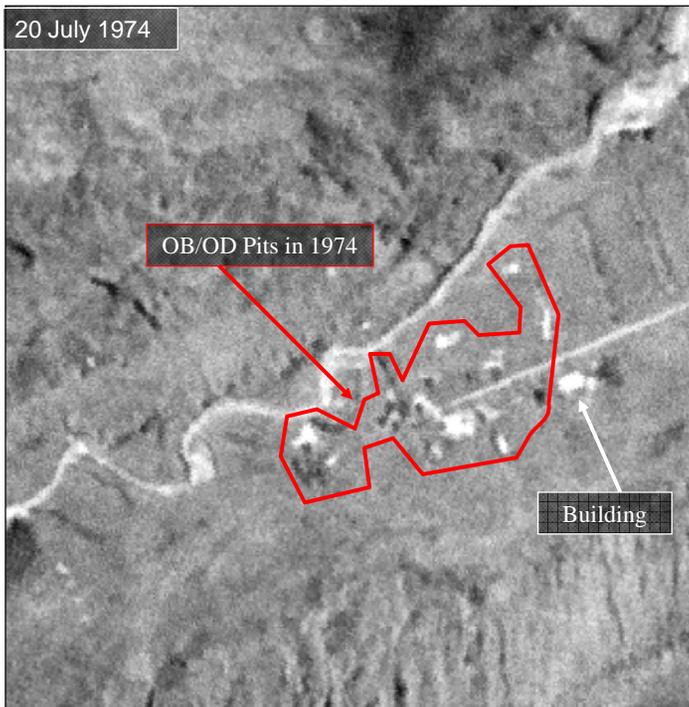


# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – OPEN BURNING/OPEN DETONATION (OB/OD) EXPLOSIVE ORDNANCE DISPOSAL: 1974 AND 1987 AERIAL PHOTOS.

Note: the OB/OD pit area displays a far more dense pattern of circular-shaped pits in 1987, however, the 1974 aerial photography indicates a further extent of the area to the northeast direction (see location 'NE').

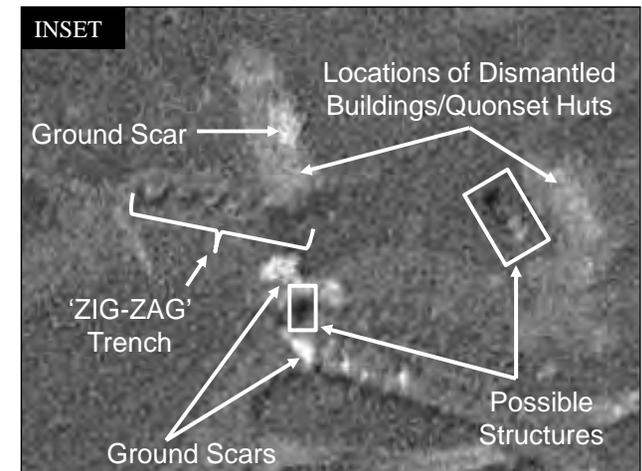
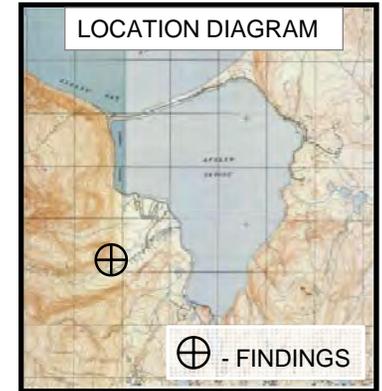
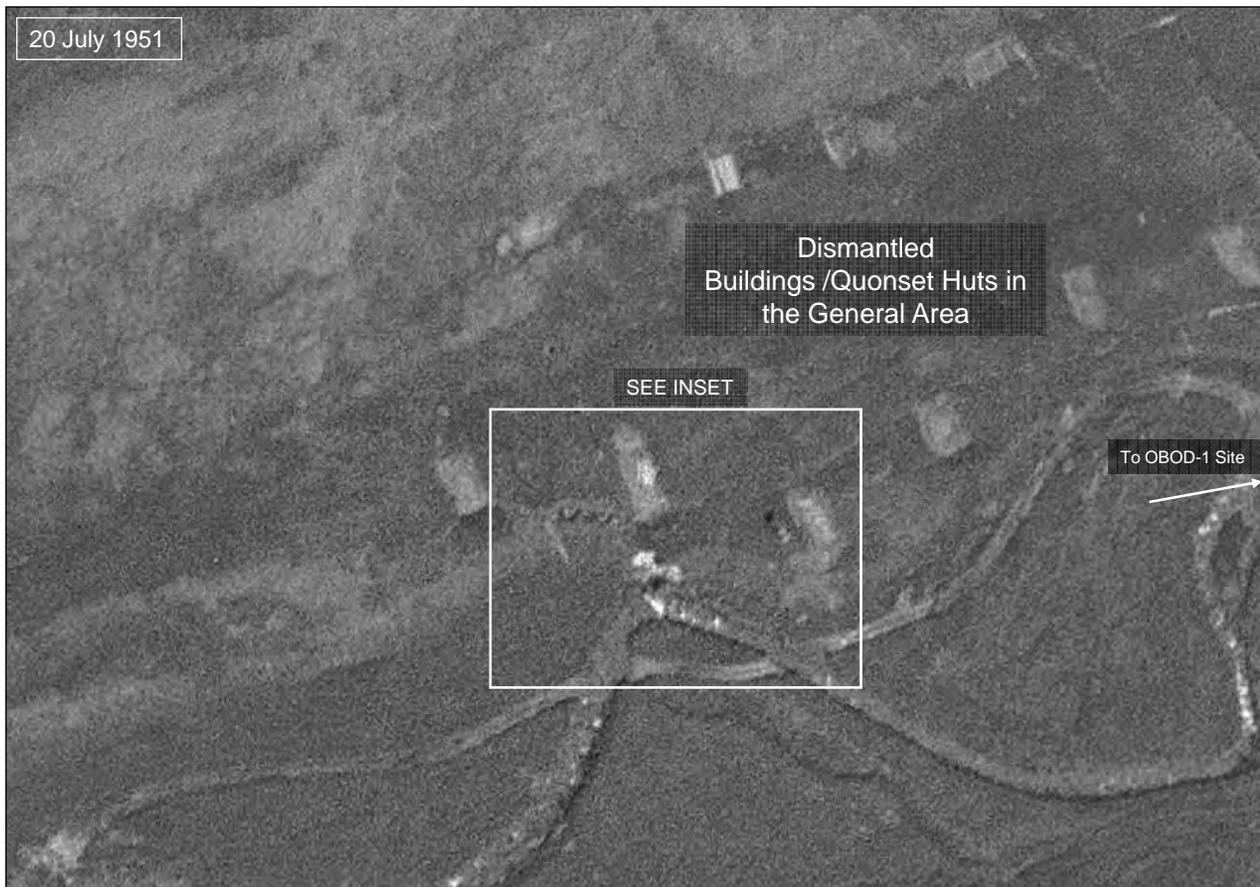




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



MOFFETT VALLEY - TRAINING RANGE AREA LOCATED JUST WEST OF THE OB/OD EXPLOSIVE ORDNANCE DISPOSAL AREA: 1951

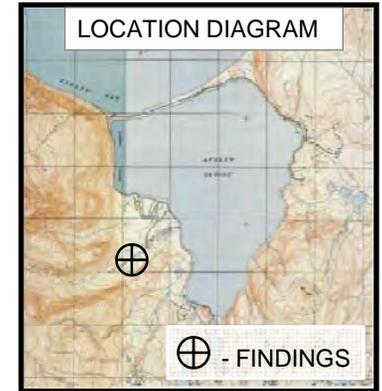
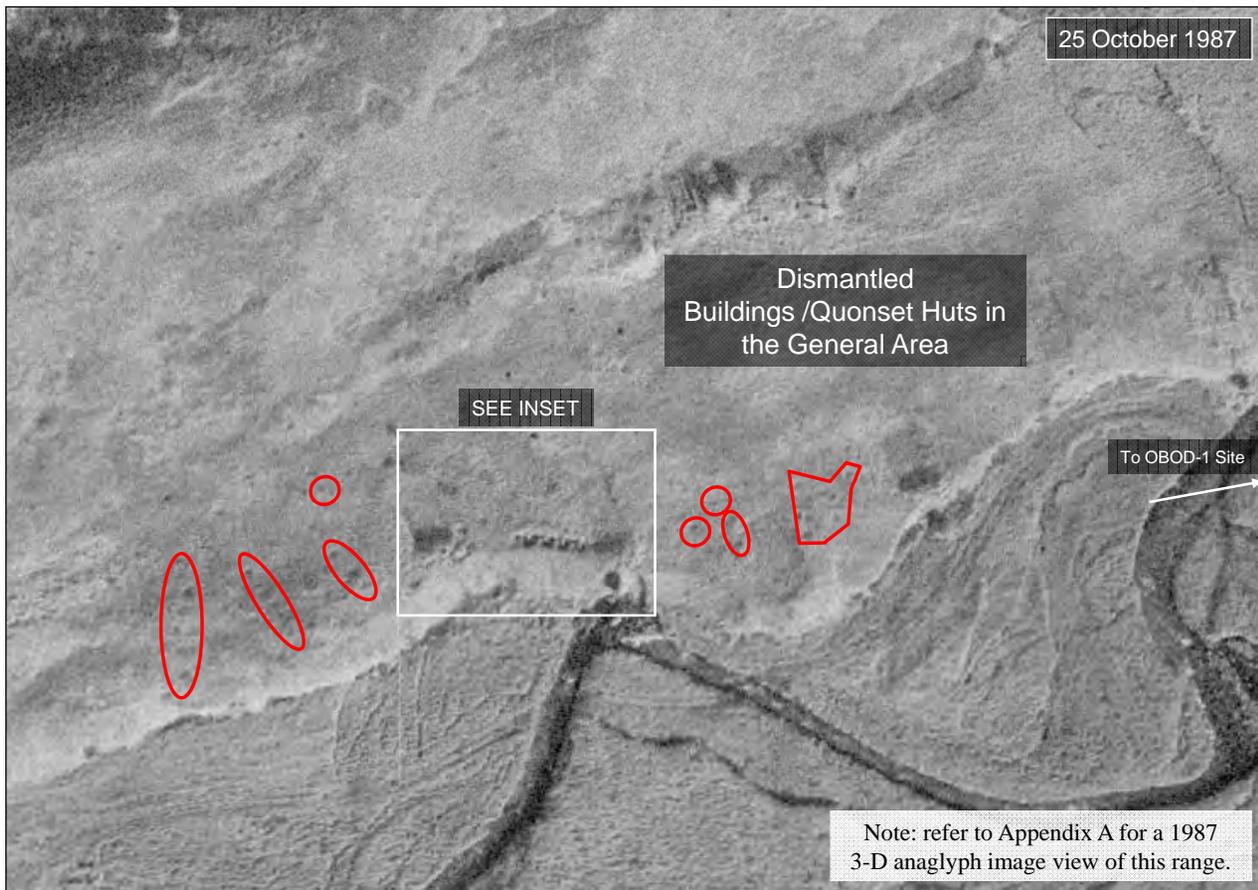




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY

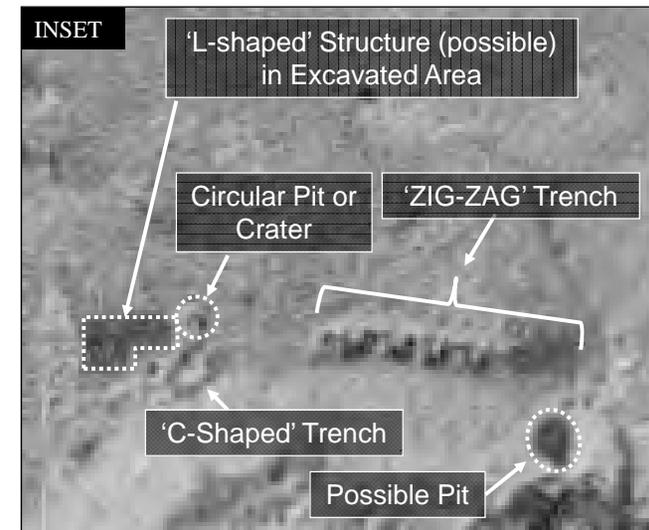


MOFFETT VALLEY - TRAINING RANGE AREA LOCATED JUST WEST OF THE OB/OD EXPLOSIVE ORDNANCE DISPOSAL AREA: 1987



○ = possible impact crater(s)

Note refer to Appendix A for an anaglyph of this area.

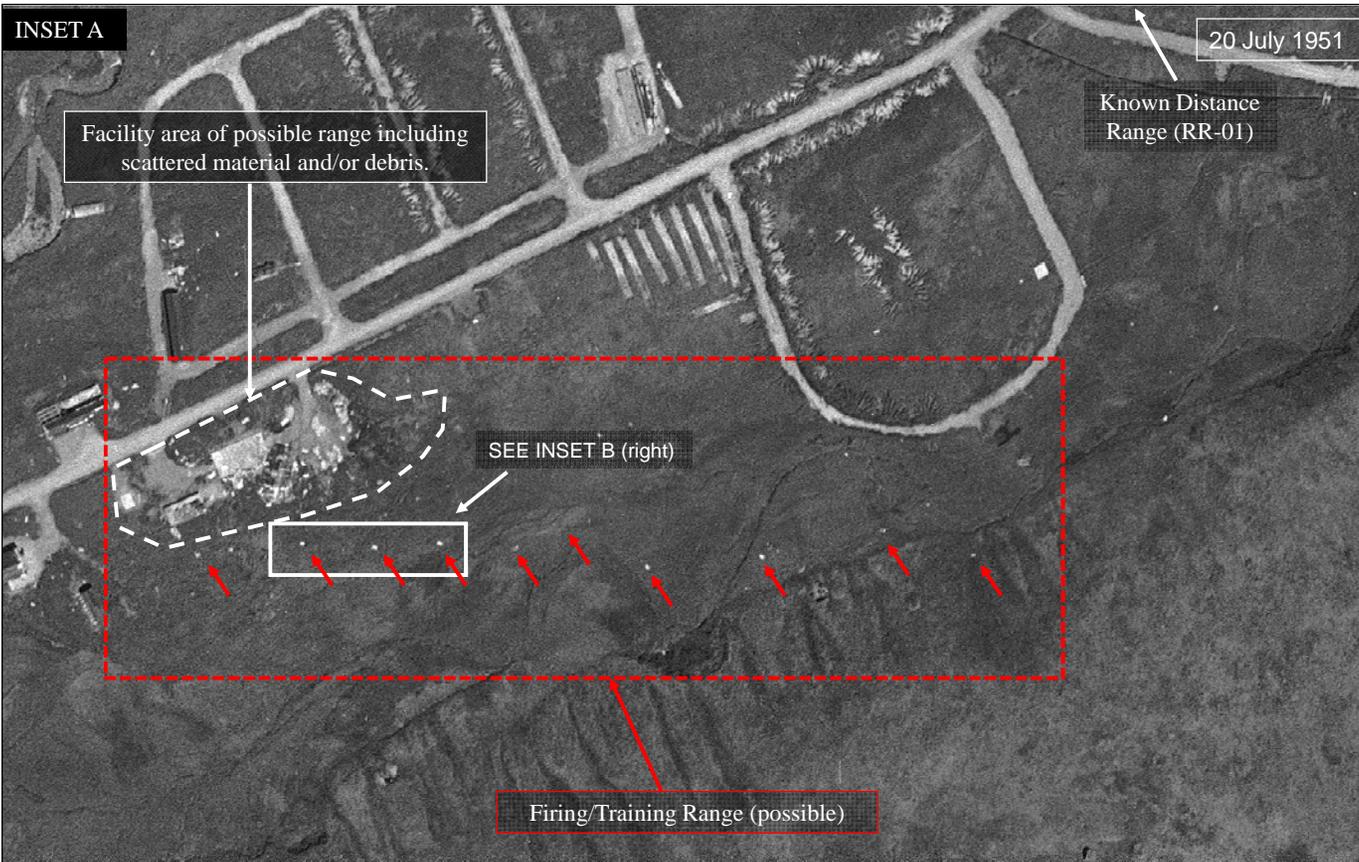




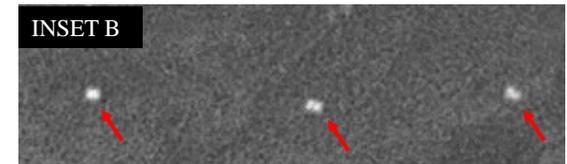
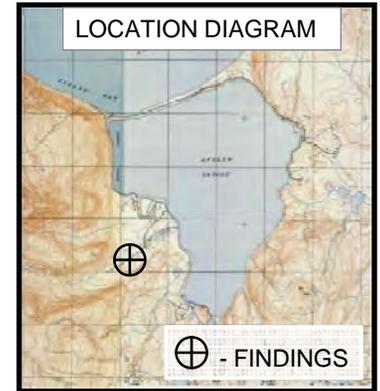
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – FIRING/TRAINING RANGE (POSSIBLE) IN OBOD-01 AND M1-03: 1951 AERIAL PHOTOGRAPHY



= ground marker or target

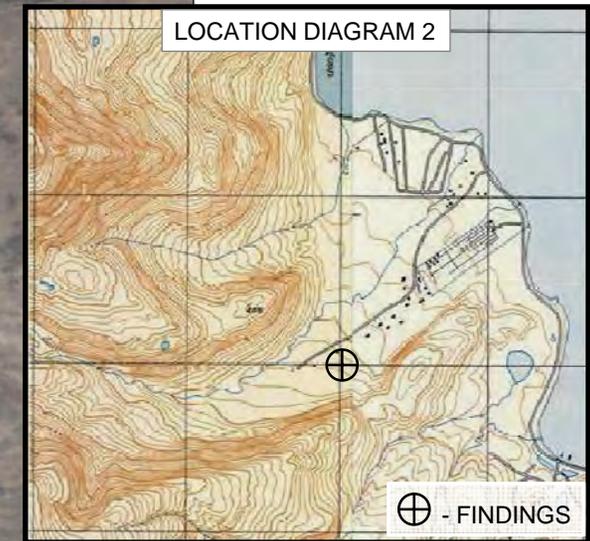
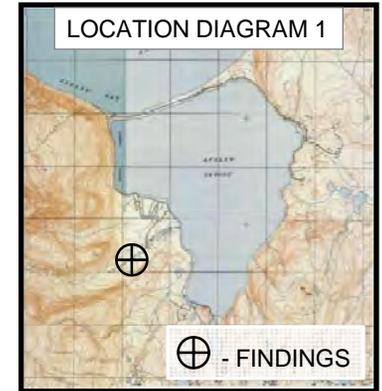




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – FIRING/TRAINING RANGE (POSSIBLE) IN OBOD-01 AND M1-03: 2006 SATELLITE IMAGERY AND 1944 MAP REFERENCE

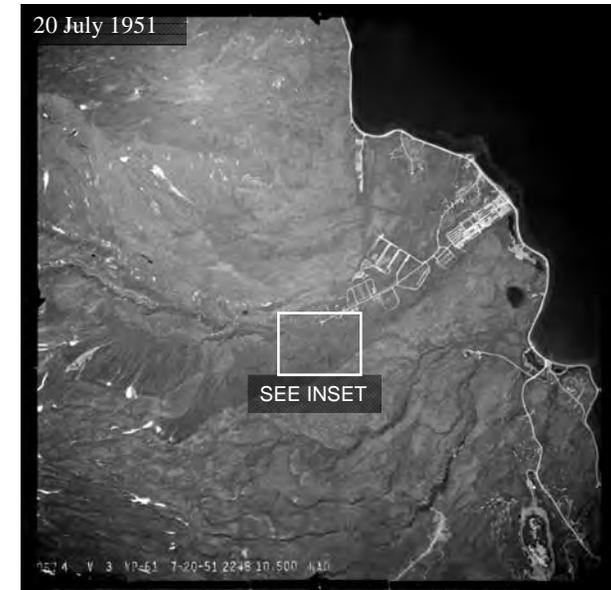
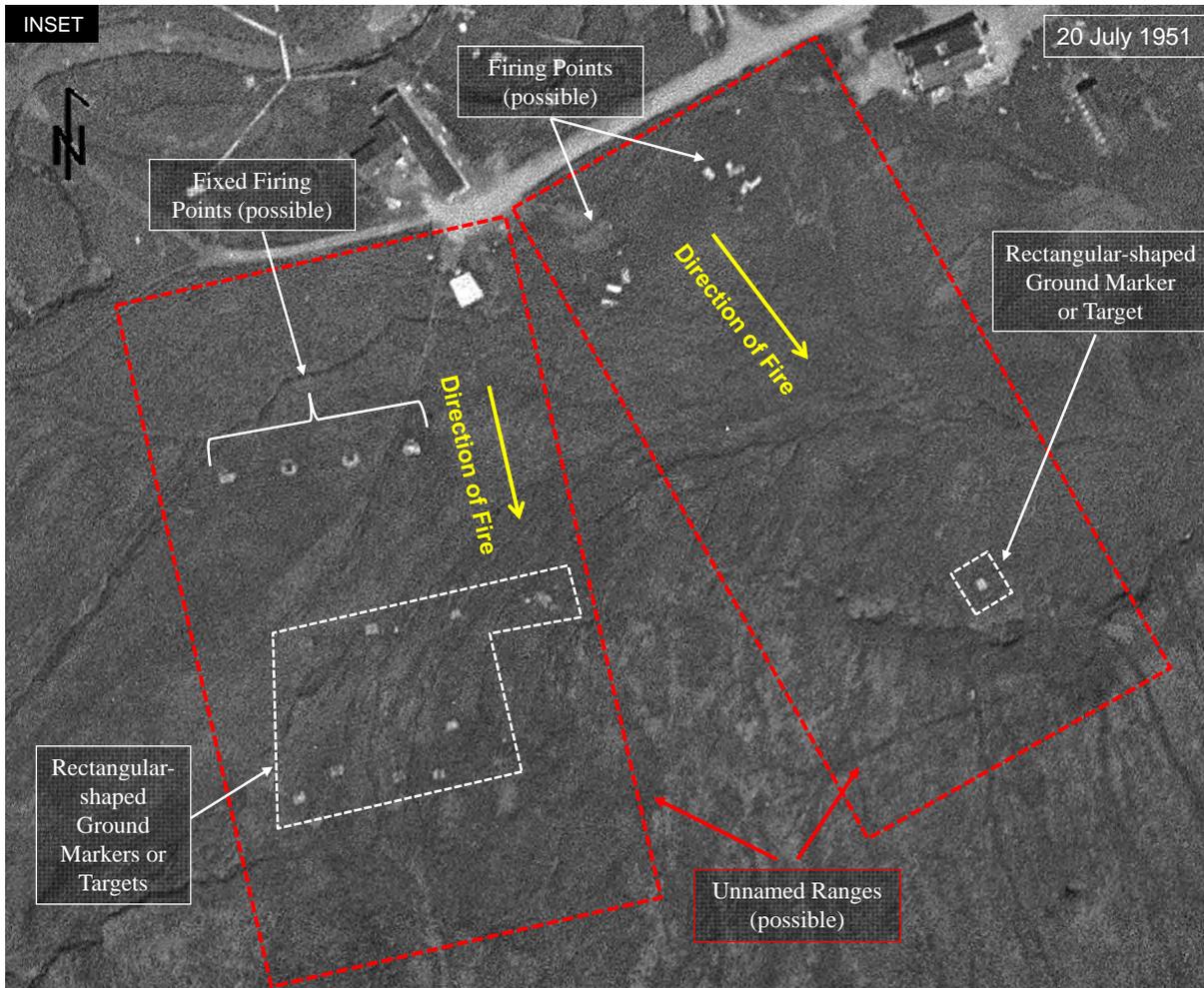
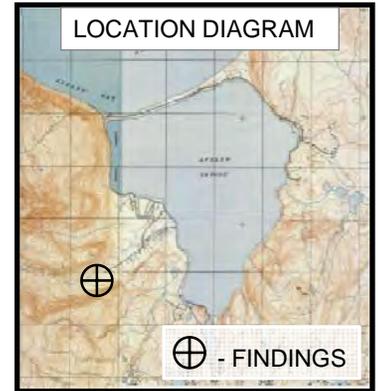




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – UNNAMED RANGES (POSSIBLE) IN M1-03: 1951 AERIAL PHOTOGRAPHY

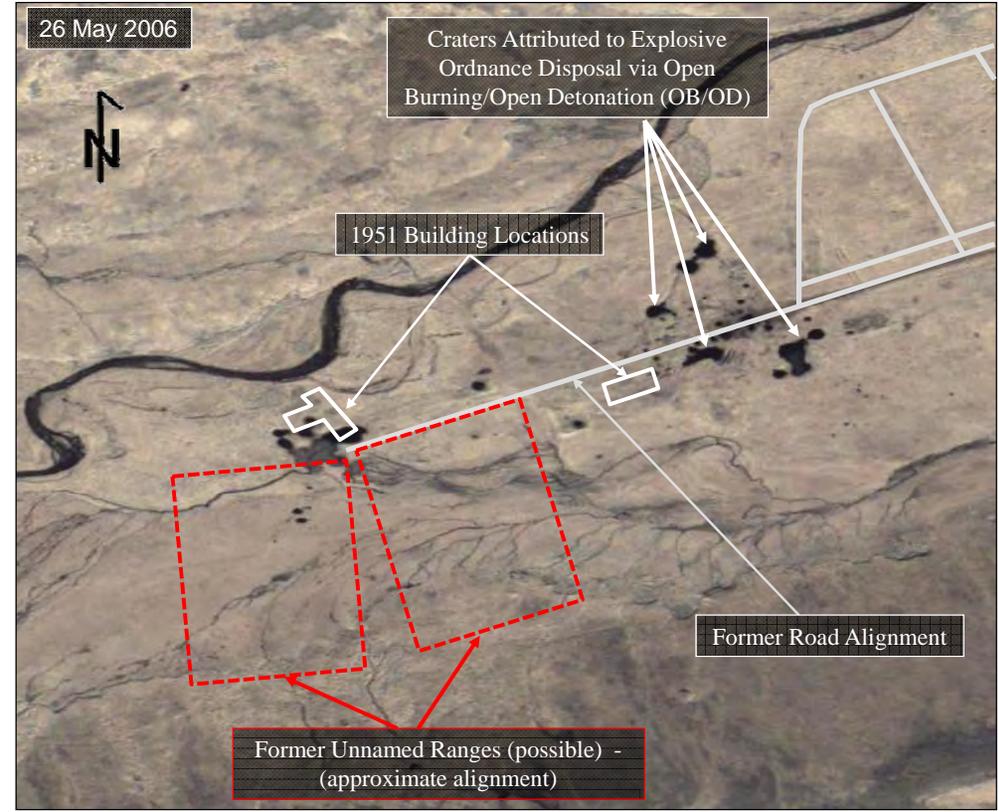
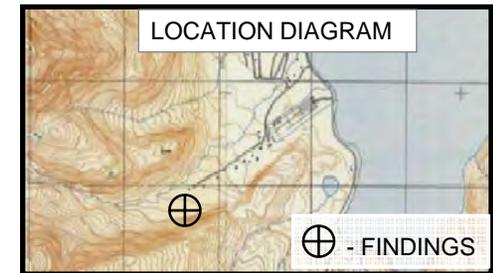




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY - UNNAMED RANGES (POSSIBLE) IN AREA M1-03: 1951 AERIAL PHOTOGRAPHY AND 2006 SATELLITE IMAGERY

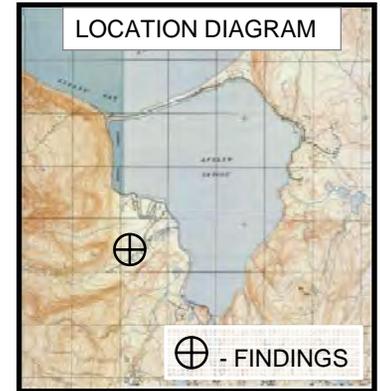




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – HAND GRENADE RANGE (HG-01)



Looking West Across HG-01 from the Throwing Pit Area Toward Mt. Moffett

Source: Remedial Investigation Report for OU B-2 Sites, Former Naval Air Facility Adak, Alaska, NAVFAC, Final, Section 4, Page 4-16. May 2012.



# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY

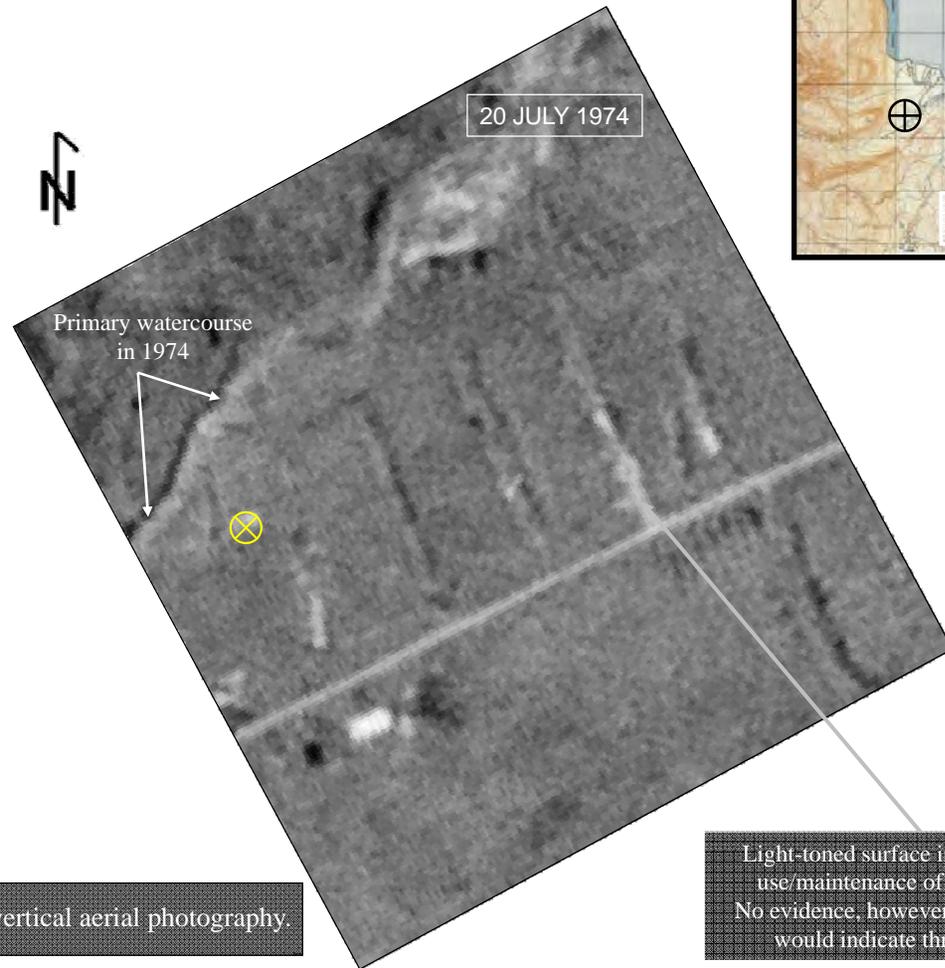


## HAND GRENADE RANGE (HG-01) AREA 20 JULY 1951 AND 29 JULY 1979

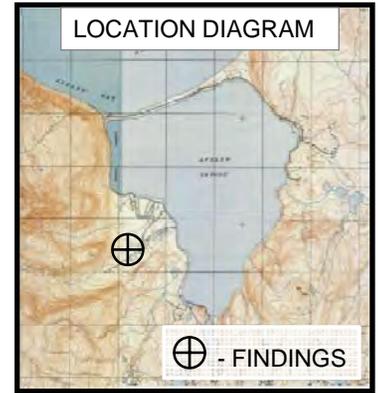


No evidence of a grenade range in July 1951.

⊗ - Indicates the same location on vertical aerial photography.



Light-toned surface indicates recent use/maintenance of the roadway. No evidence, however, of a berm that would indicate throwing pits.

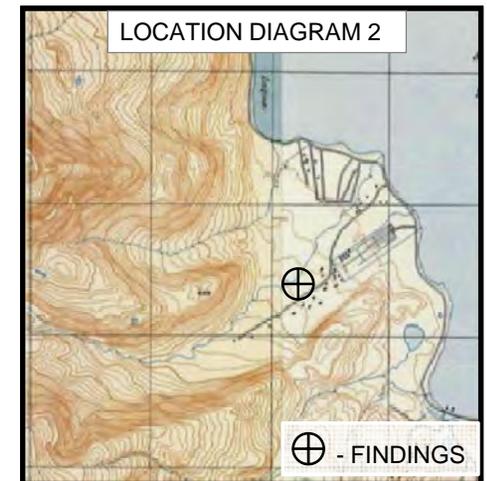
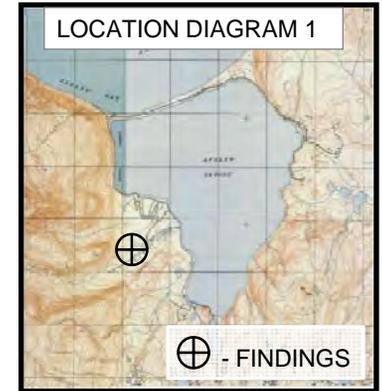
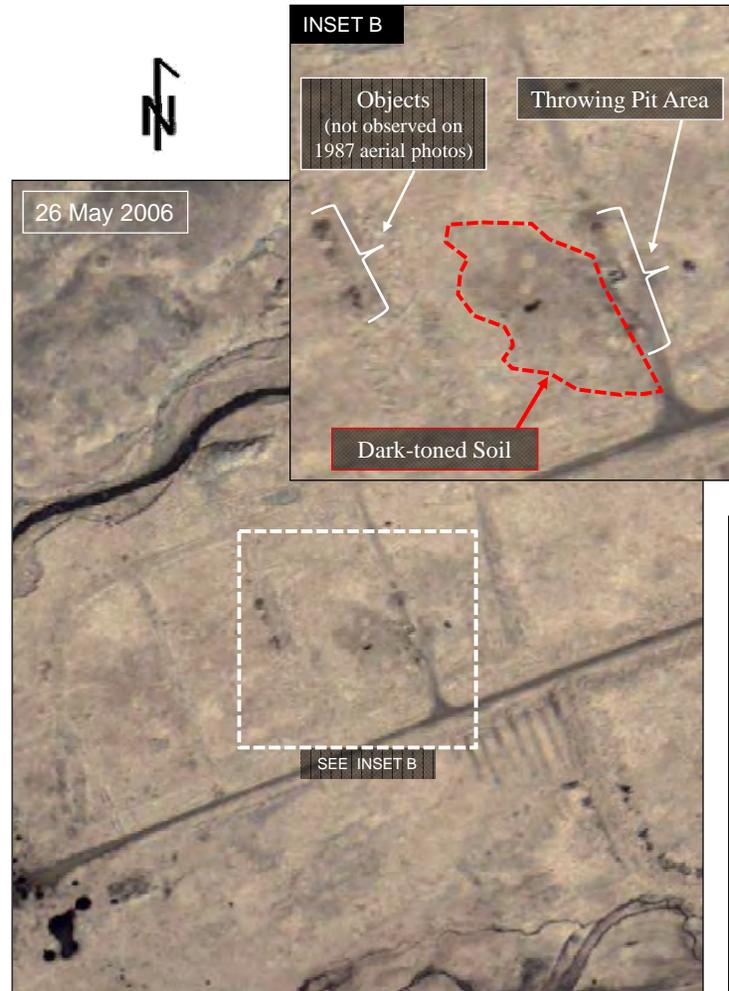
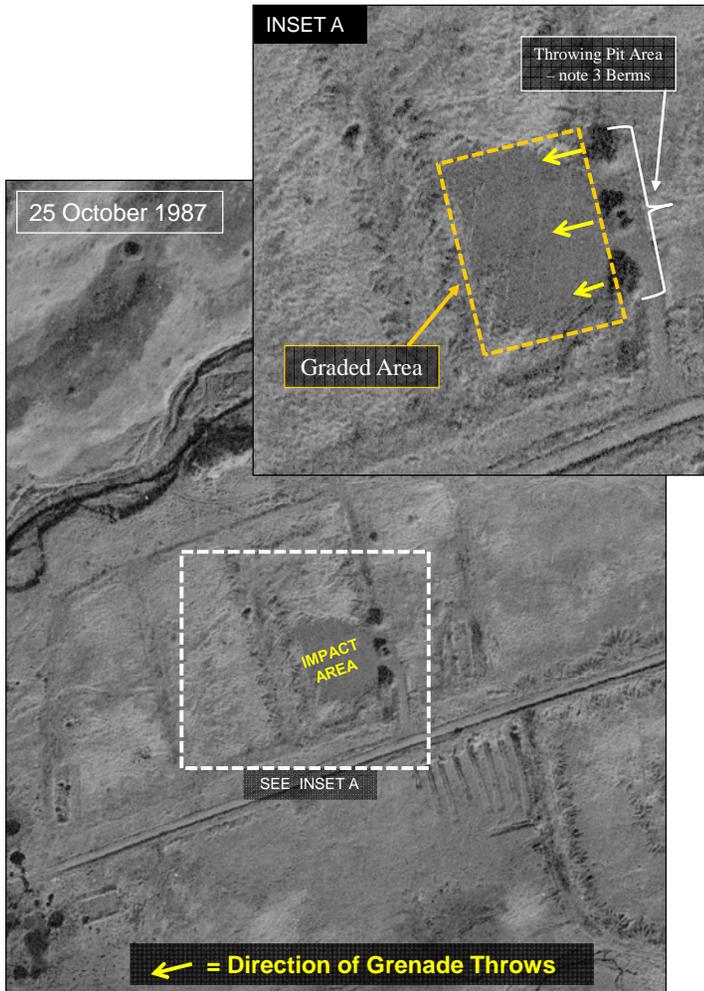




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## HAND GRENADE RANGE (HG-01) AREA: 25 OCTOBER 1987 AND 26 MAY 2006

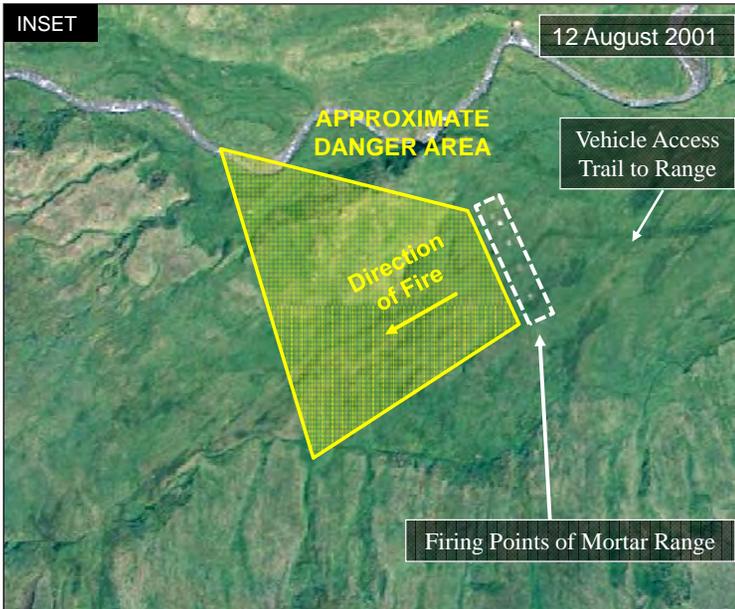
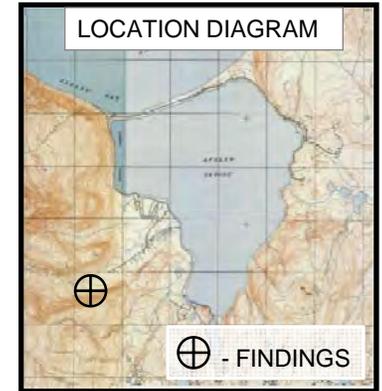
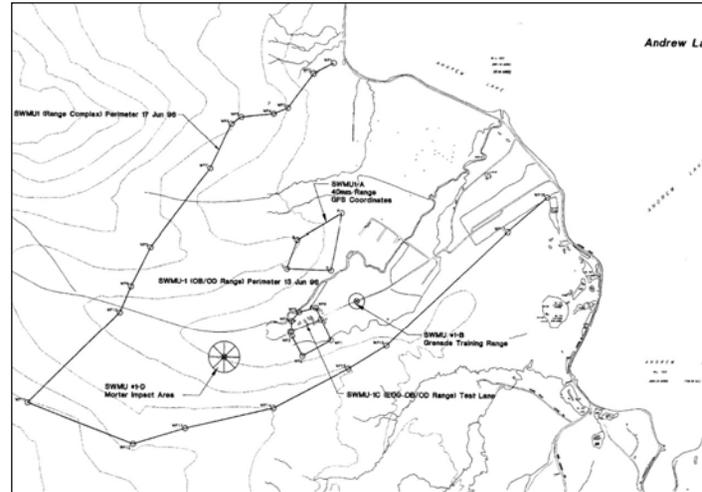
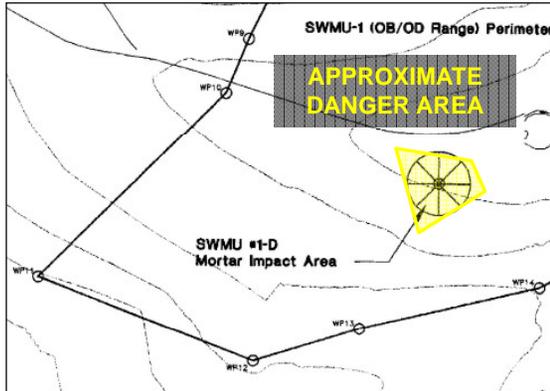




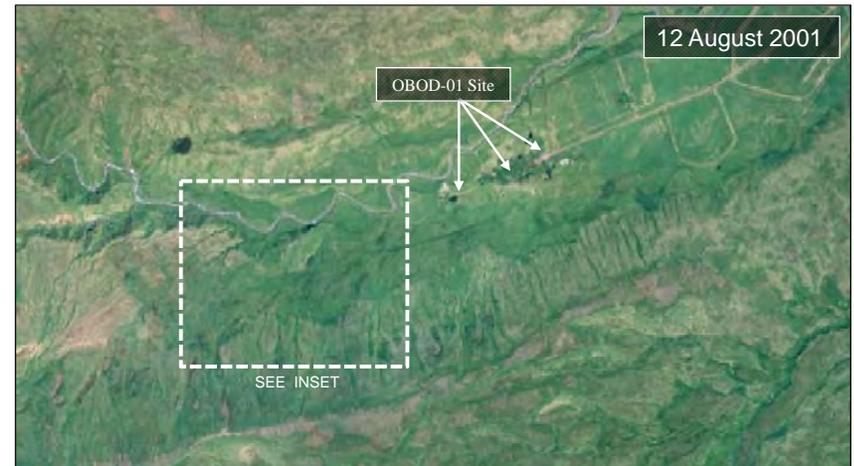
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MORTAR IMPACT AREA (SWMU 1-D): 12 AUGUST 2001



Source: INDEX #9.83, 9/23/96, FIVE MAPS OF ADAK REGARDING UXO ITMES, 1996 Summary of EOD Investigation,

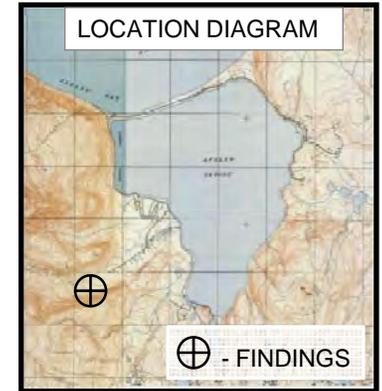
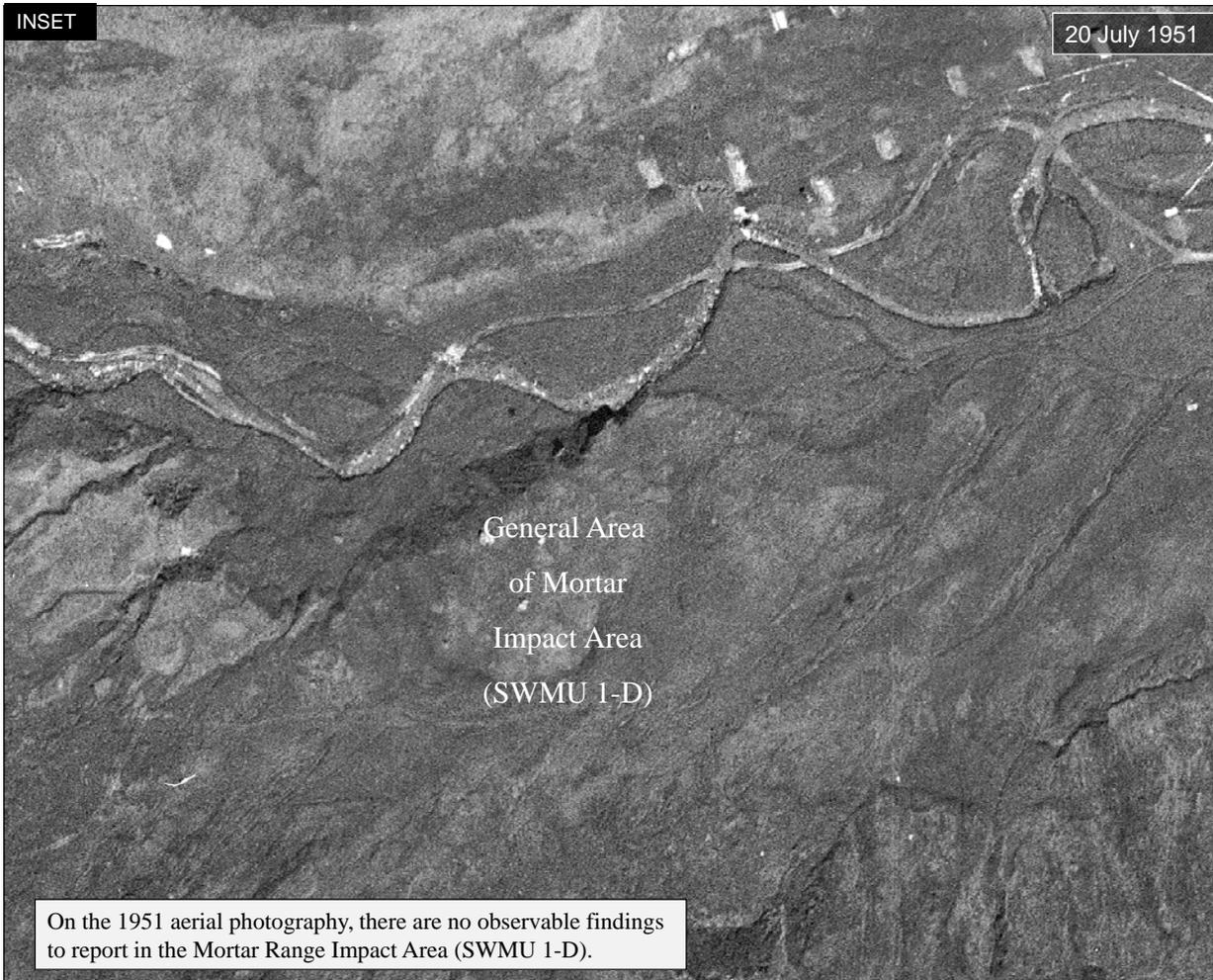




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MORTAR IMPACT AREA (SWMU 1-D): 20 JULY 1951

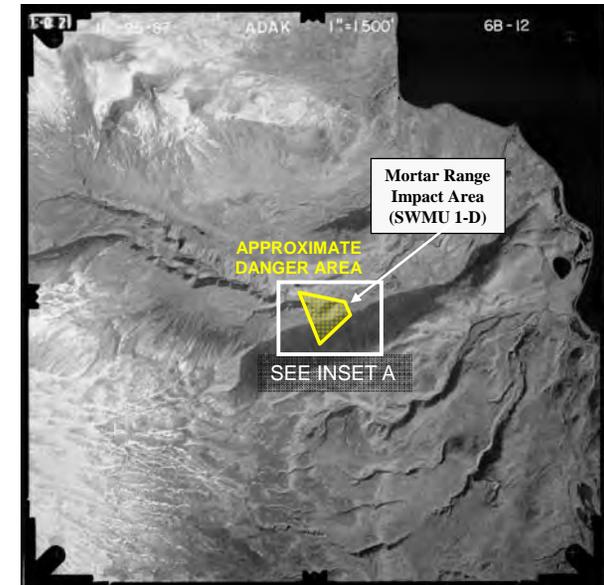
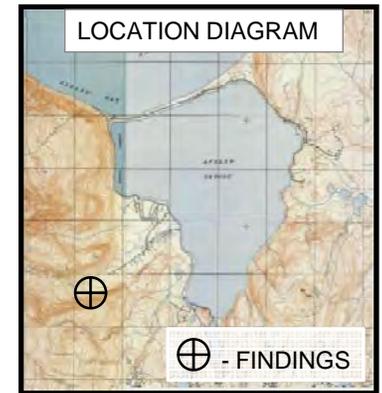




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MORTAR IMPACT AREA (SWMU 1-D): 25 OCTOBER 1987

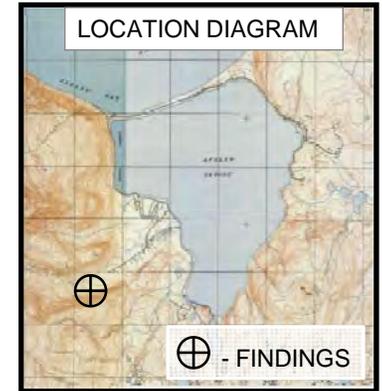
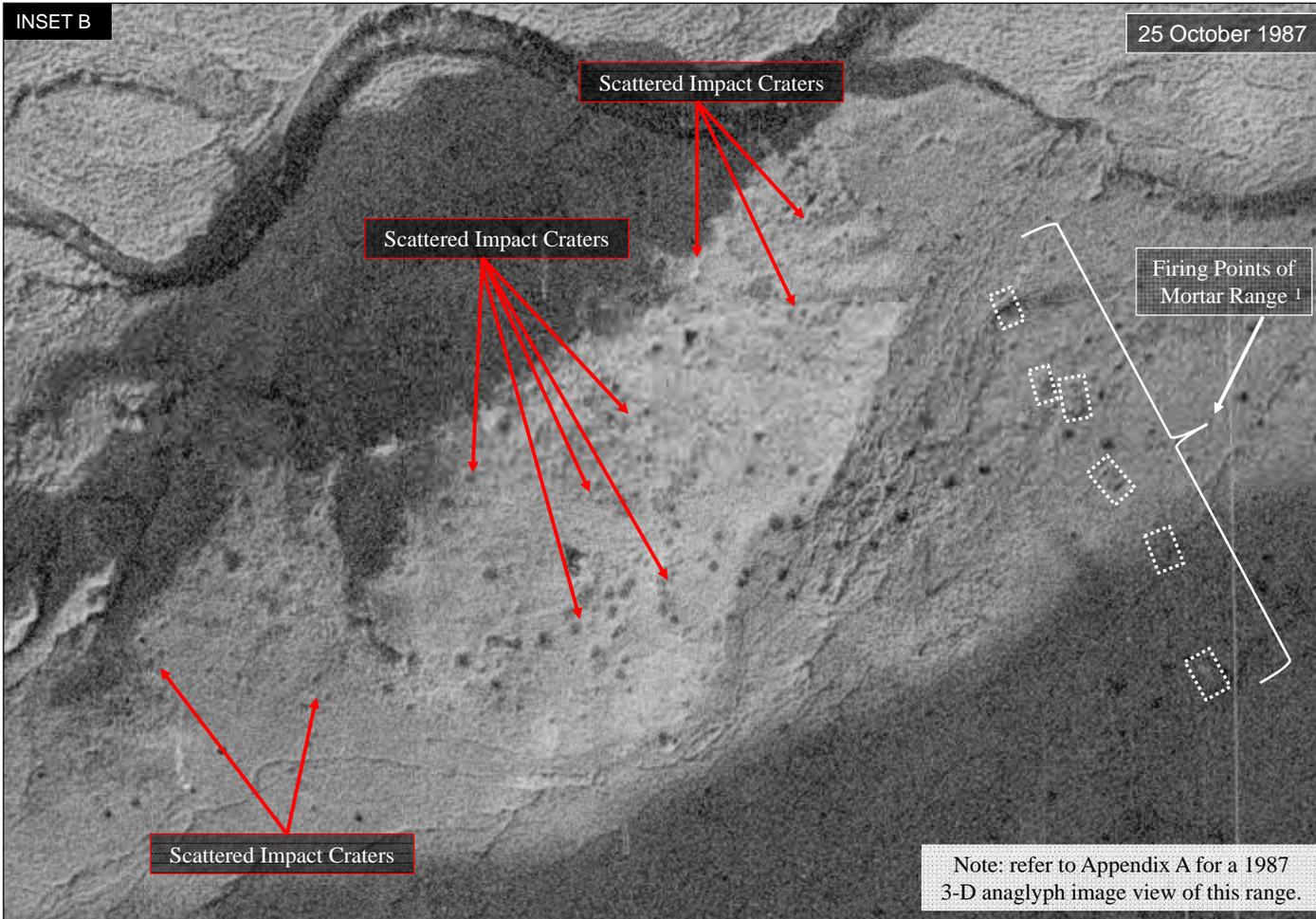




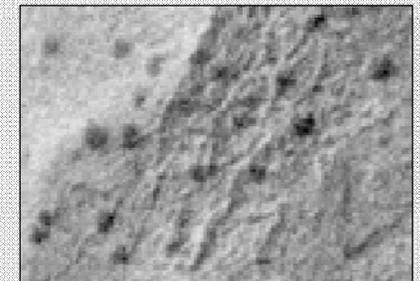
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MORTAR IMPACT AREA (SWMU 1-D): 25 OCTOBER 1987, CONTINUED



Note: some or many of the dark small patches appearing on the surface, in and around the vicinity of the mortar impact area (see example below), may be impact craters that have been seeded by natural plant communities.



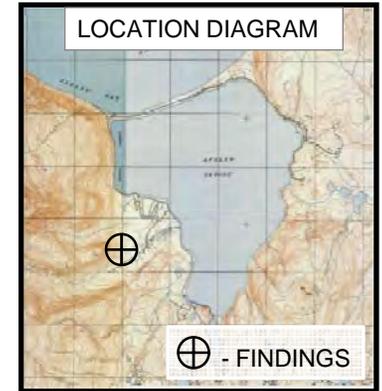
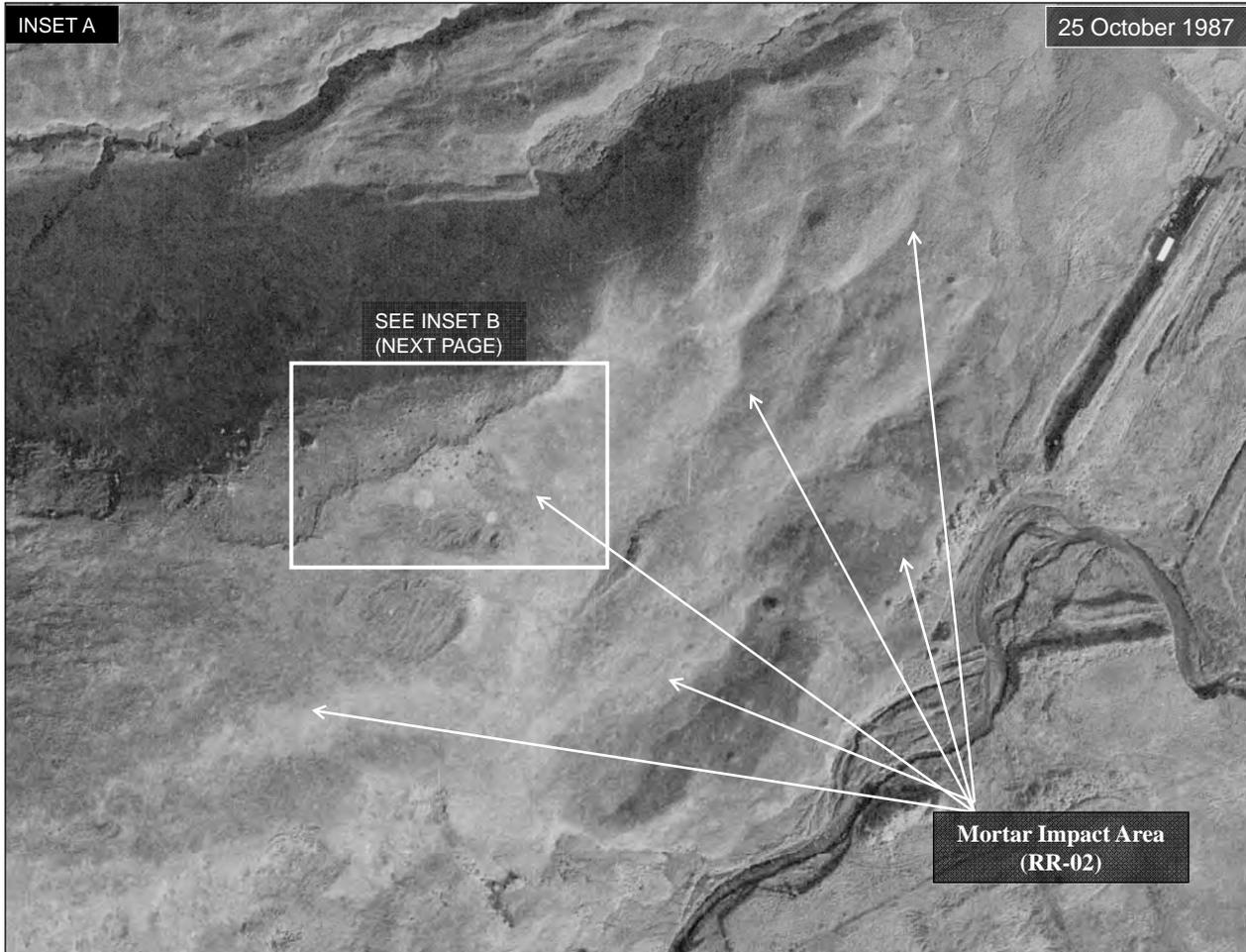
<sup>1</sup> Firing points observed for the first time on 1:76,000 scale aerial photography dated 29 July 1974.



# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – POSSIBLE IMPACT CRATERS AT THE ANDREW LAKE RIFLE GRENADE RANGE IMPACT AREA (RG-01): 25 OCTOBER, 1987

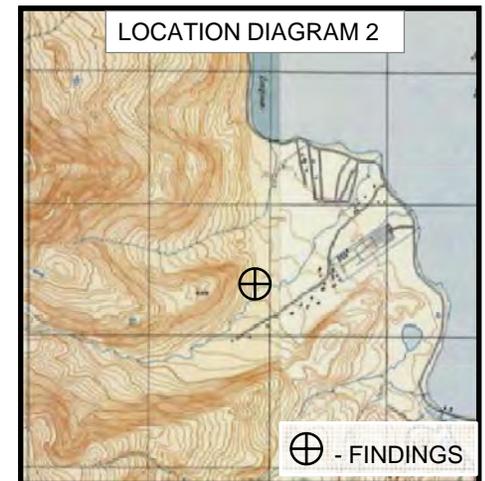
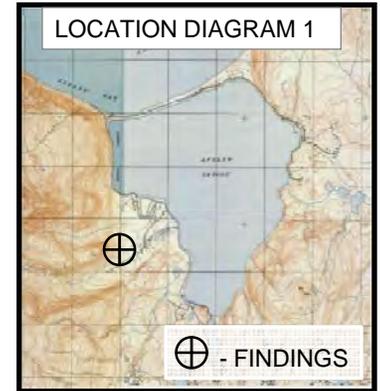
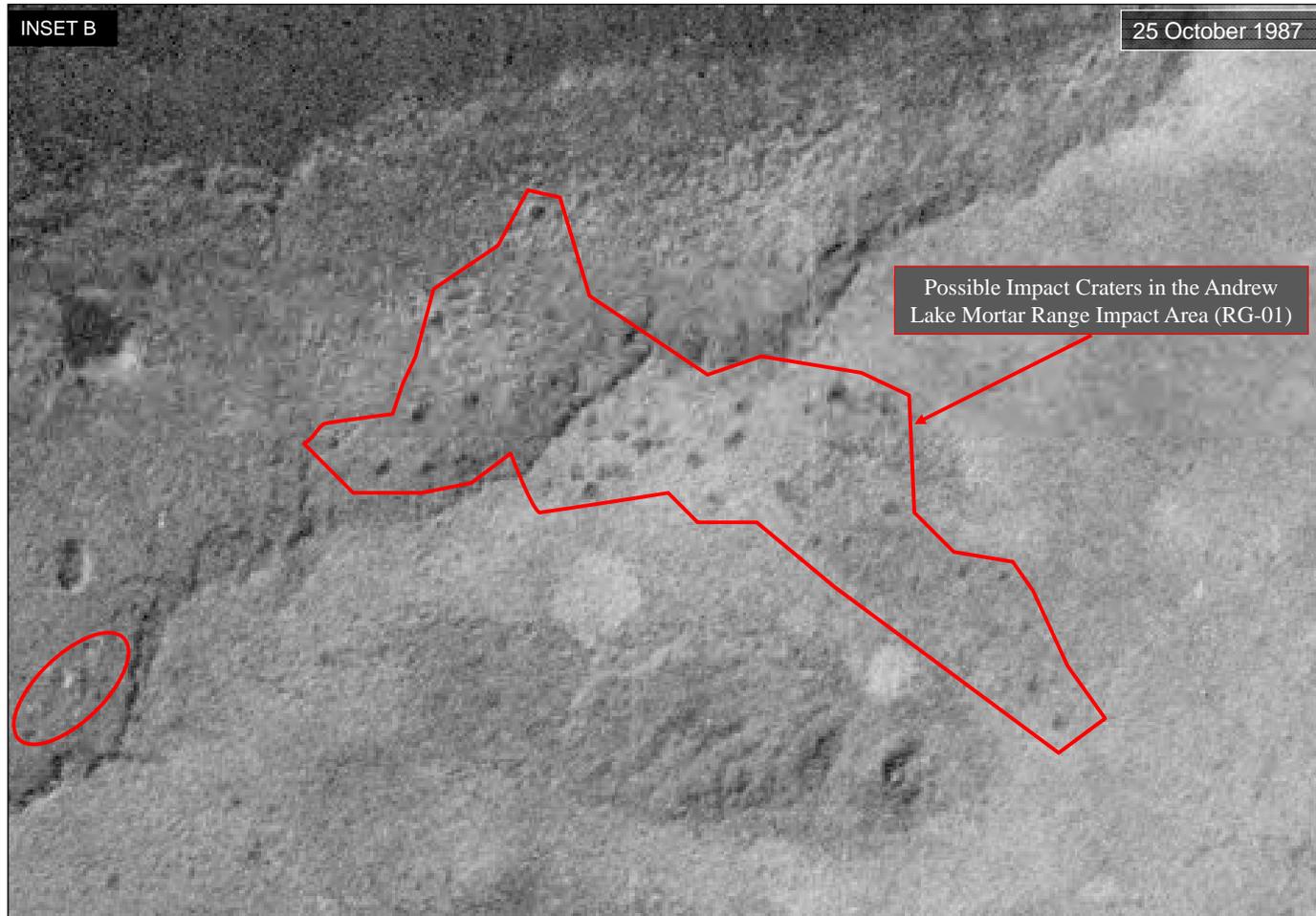




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



MOFFETT VALLEY – POSSIBLE IMPACT CRATERS AT THE ANDREW LAKE RIFLE GRENADE RANGE IMPACT AREA (RG-01): 25 OCTOBER, 1987; CON'TD

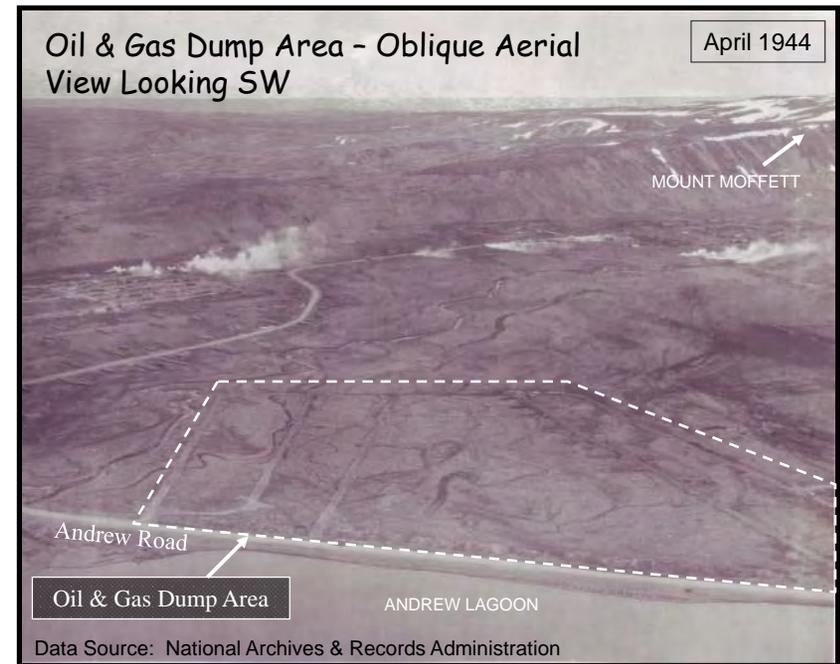
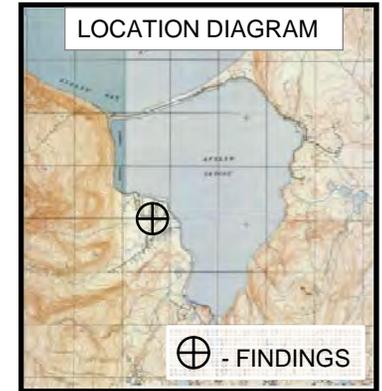
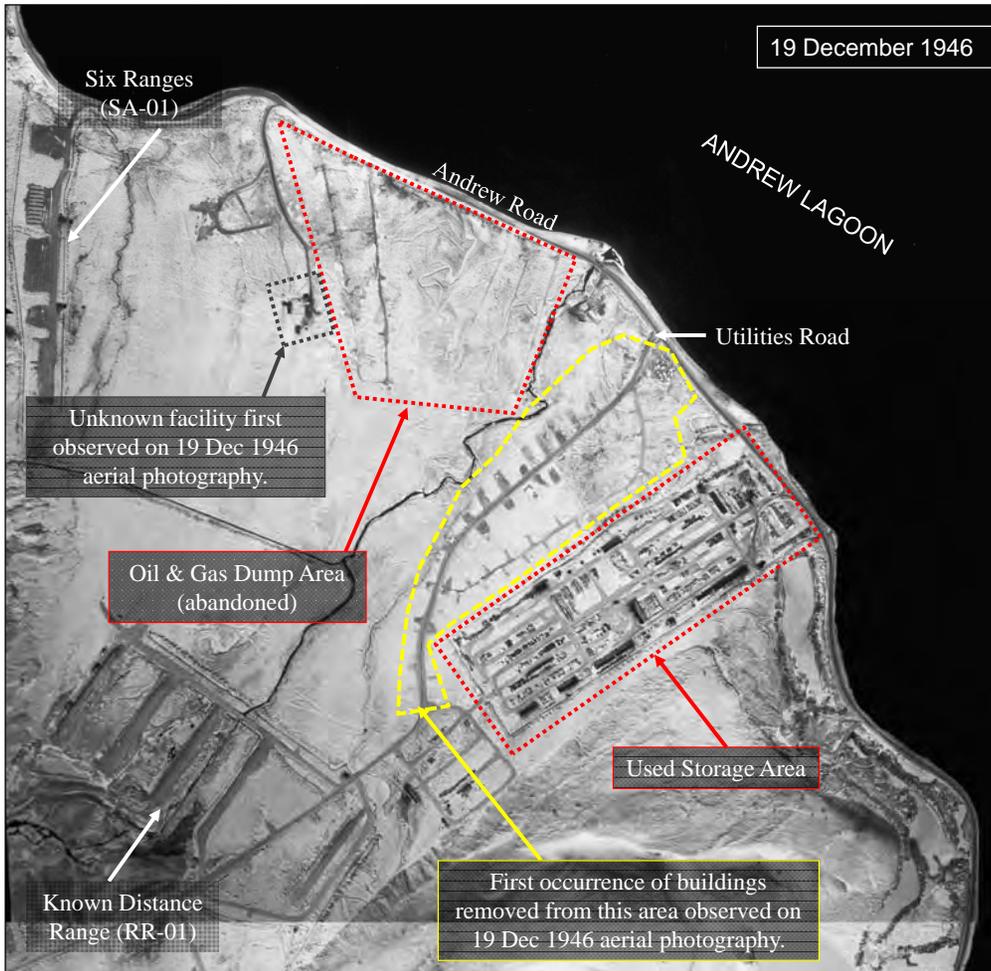




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – OIL & GAS DUMP AREA AND USED STORAGE AREA 1944 OBLIQUE AND 1946 VERTICAL AERIAL PHOTOGRAPHY





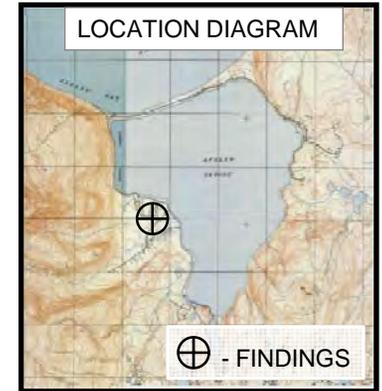
# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – OIL & GAS DUMP AREA AND USED STORAGE AREA 1951 AERIAL PHOTOGRAPHY



Unknown facility first observed on 19 Dec 1946 aerial photography.





# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – OIL & GAS DUMP AREA AND USED STORAGE AREA 1951 AERIAL PHOTOGRAPHY AND 2006 SATELLITE IMAGERY

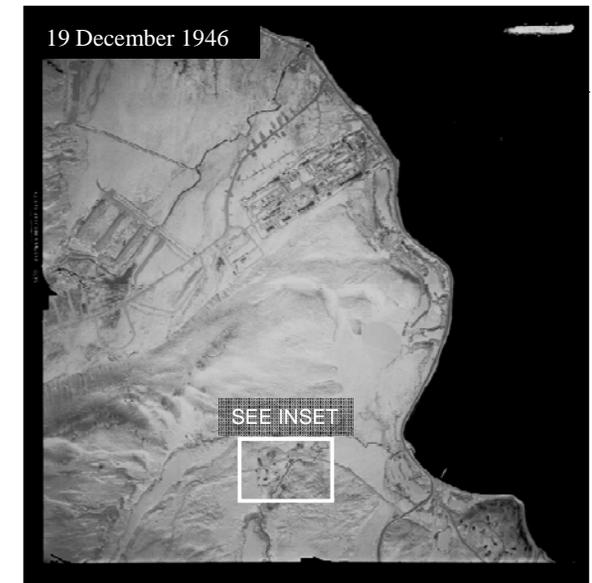
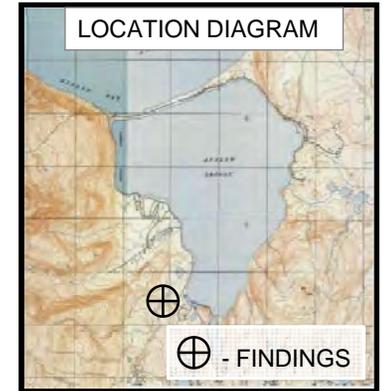




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – UNNAMED FACILITY ON NURSE ROAD 1946 AERIAL PHOTOGRAPHY

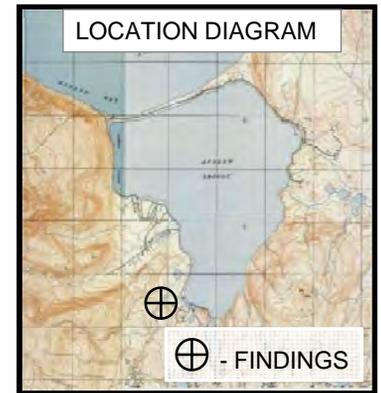




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – UNNAMED FACILITY ON NURSE ROAD 1951 AERIAL PHOTOGRAPHY

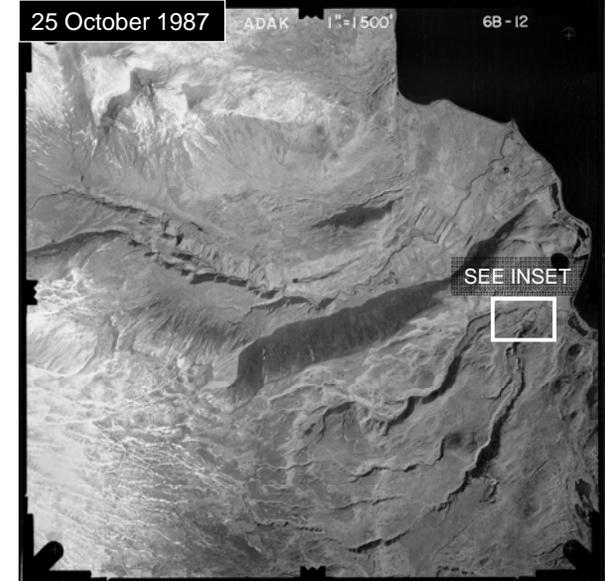
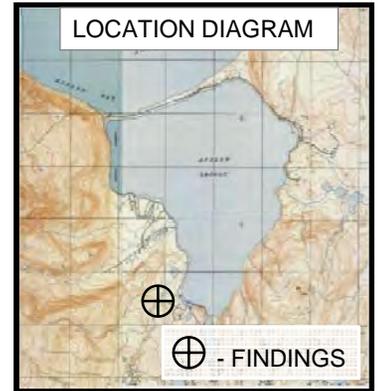
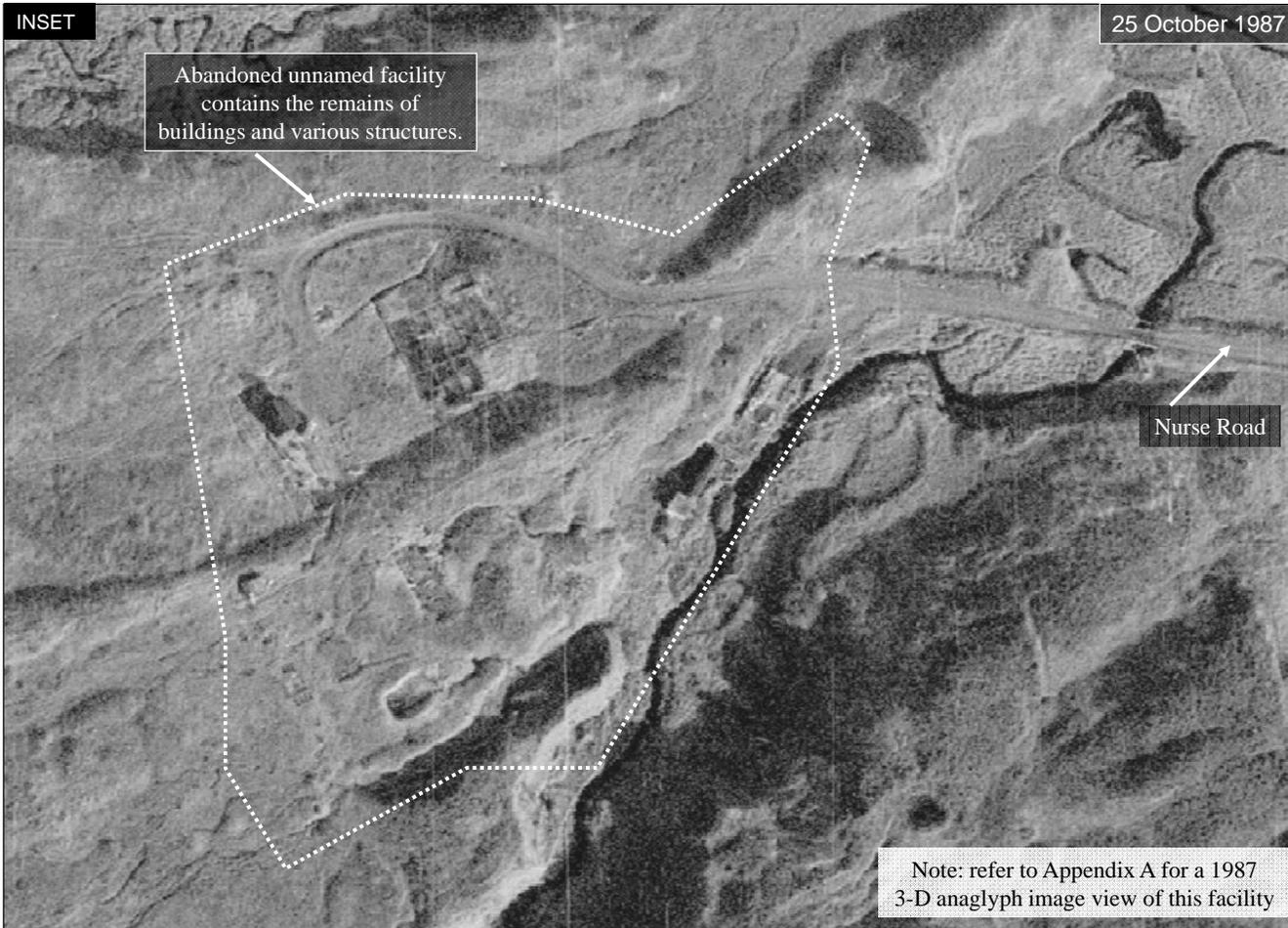




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – UNNAMED FACILITY ON NURSE ROAD 1987 AERIAL PHOTOGRAPHY

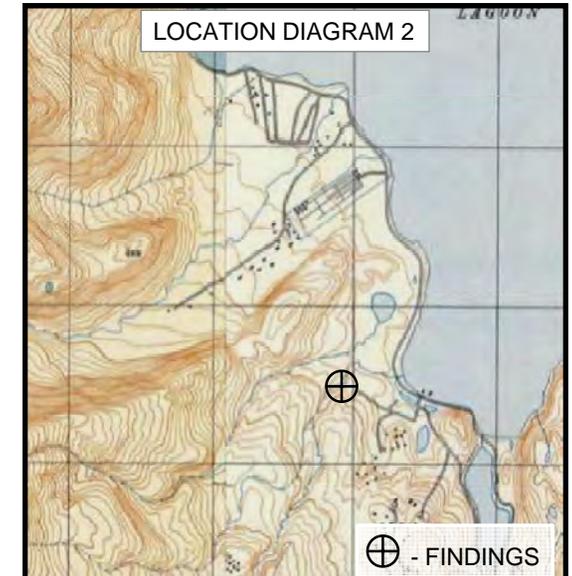
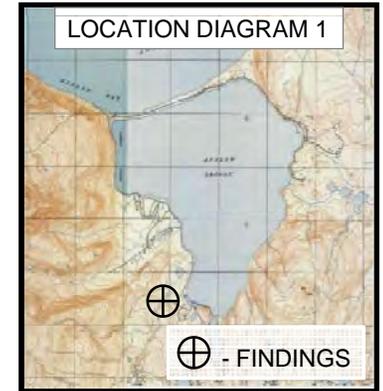




# PHOTOGRAPHIC ANALYSIS – MOFFETT VALLEY



## MOFFETT VALLEY – UNNAMED FACILITY ON NURSE ROAD 2001 AERIAL PHOTOGRAPHY

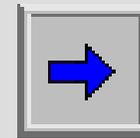




## APPENDIX A



### Aerial Photo Anaglyphs



IMAGES

-  3-dimensional (3-D) aerial images created from selected historical aerial photographs.
-  To obtain the 3-D effect, images must be viewed with red/blue lens stereo glasses.



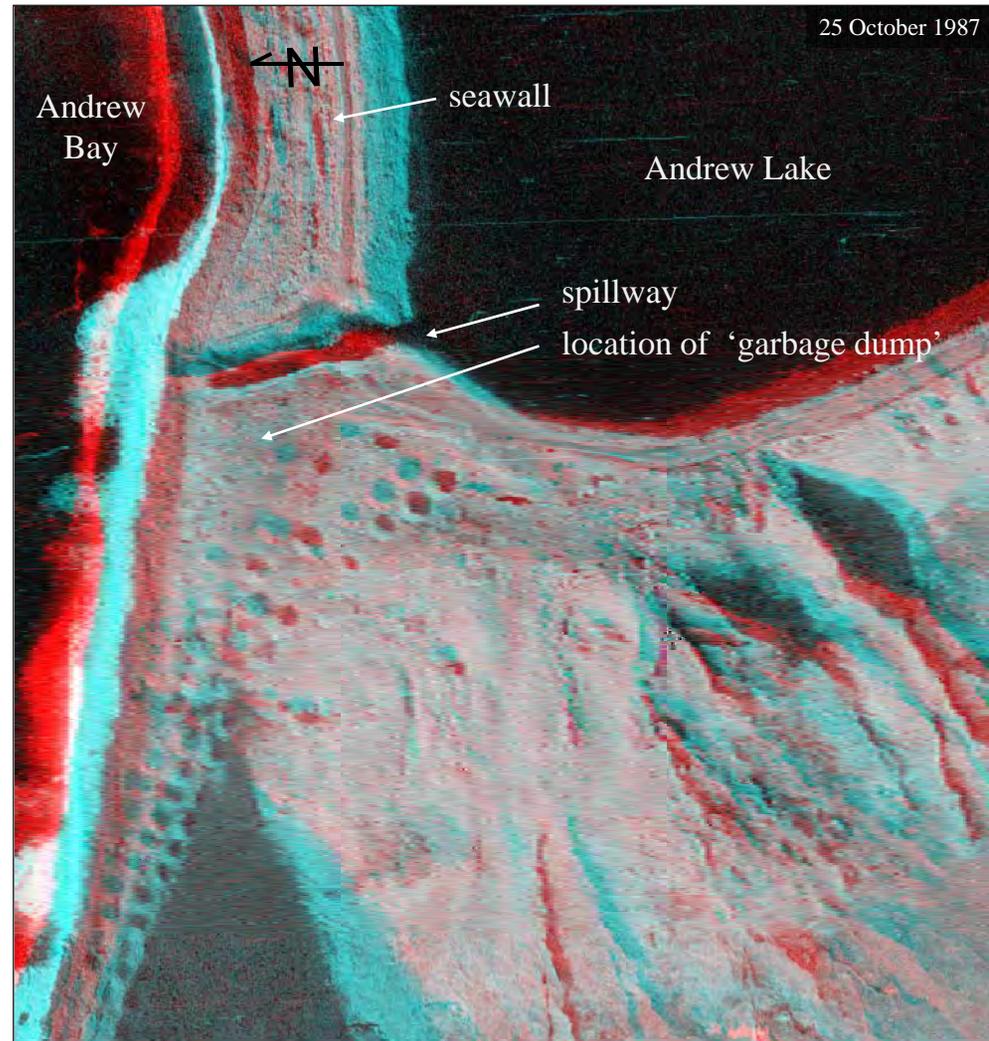
## 3-D AERIAL IMAGE : WEST SEAWALL & SHORELINE AREA



### 3-D IMAGE NO. 1



To obtain the 3-D effect, images must be viewed with red/blue lens stereo glasses.



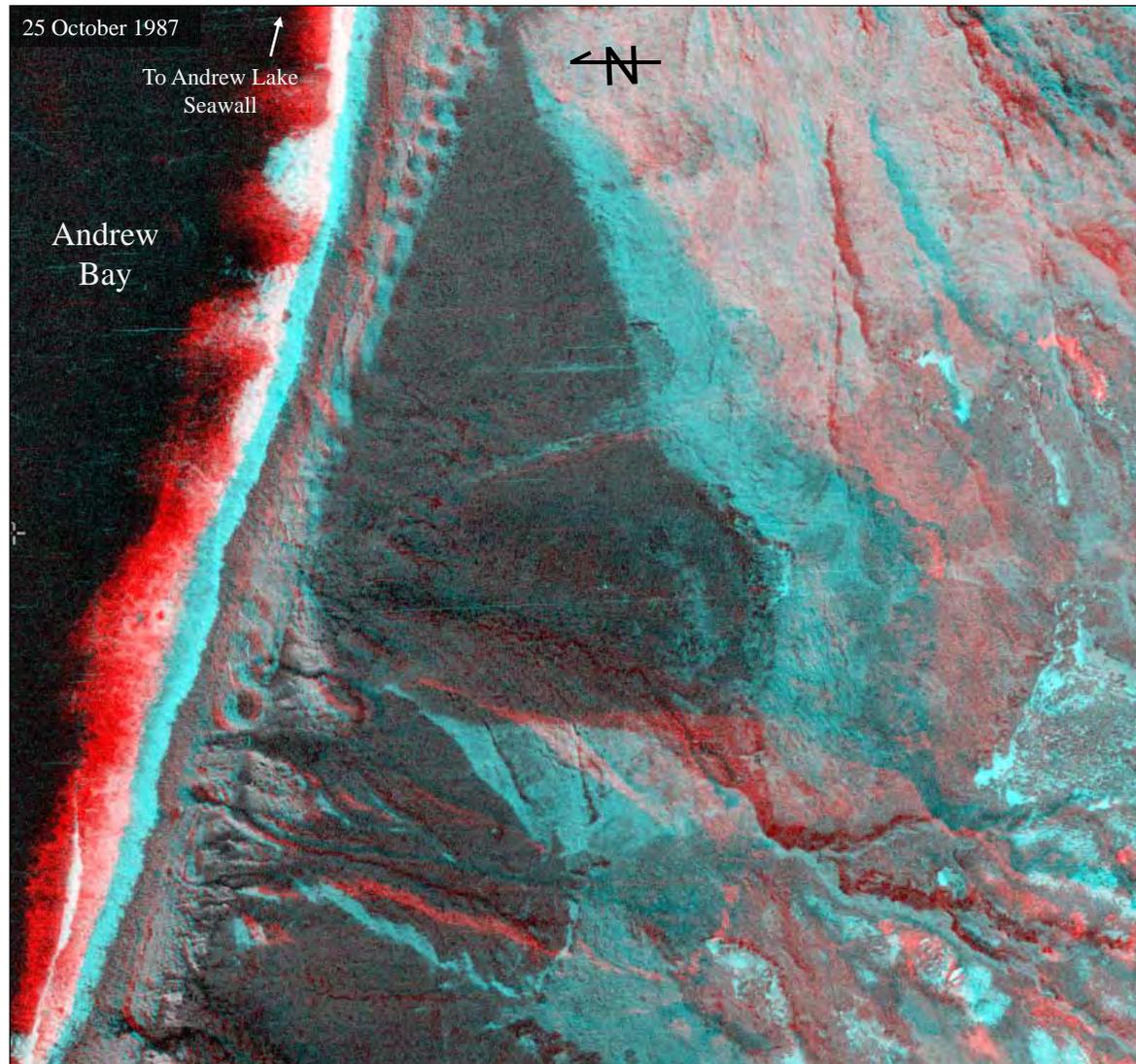
Western section of Andrew Lake Seawall and shoreline along Andrew Bay. Numerous craters are evident in this area (left side of image).



## 3-D AERIAL IMAGE : WEST SEAWALL & SHORELINE AREA



### 3-D IMAGE NO. 2



Section of shoreline just west of Andrew Lake Seawall. Numerous craters are evident in this area (left side of image).

To obtain the 3-D effect, images must be viewed with red/blue lens stereo glasses.

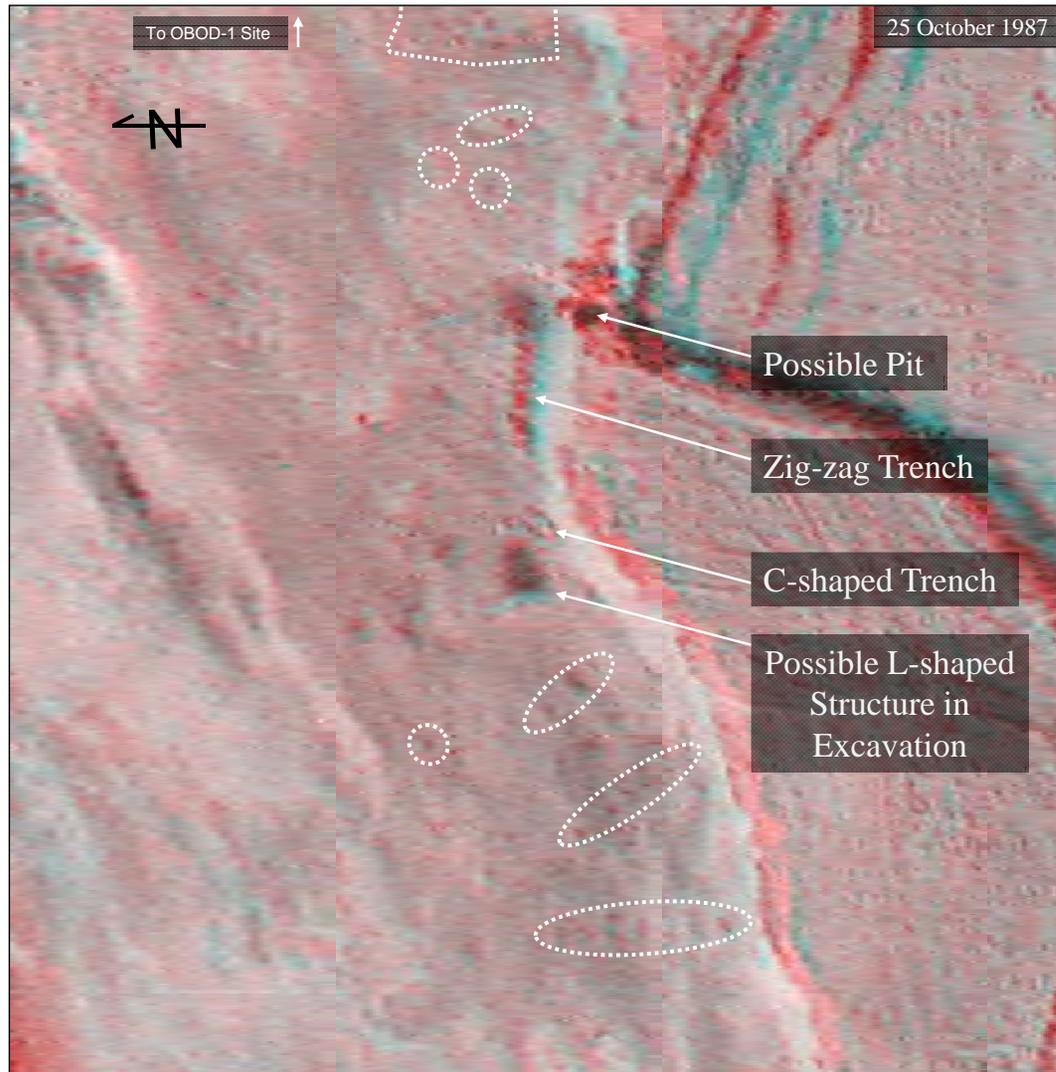


# 3-D AERIAL IMAGE : MOFFETT VALLEY

## 3-D IMAGE NO. 3

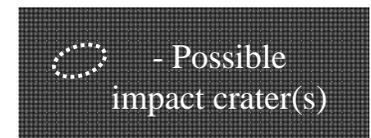


To obtain the 3-D effect, images must be viewed with red/blue lens stereo glasses.



Elevated bluff above riverbed channel (upper right side of photo), just west of the OB/OD Area.

Depicted are both C-shaped and Zig-zag trenches, a possible L-shaped structure (situated in the center of an excavation), and possible impact craters.

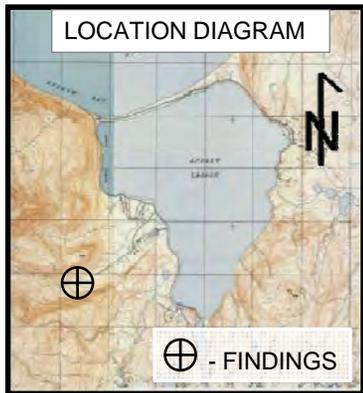




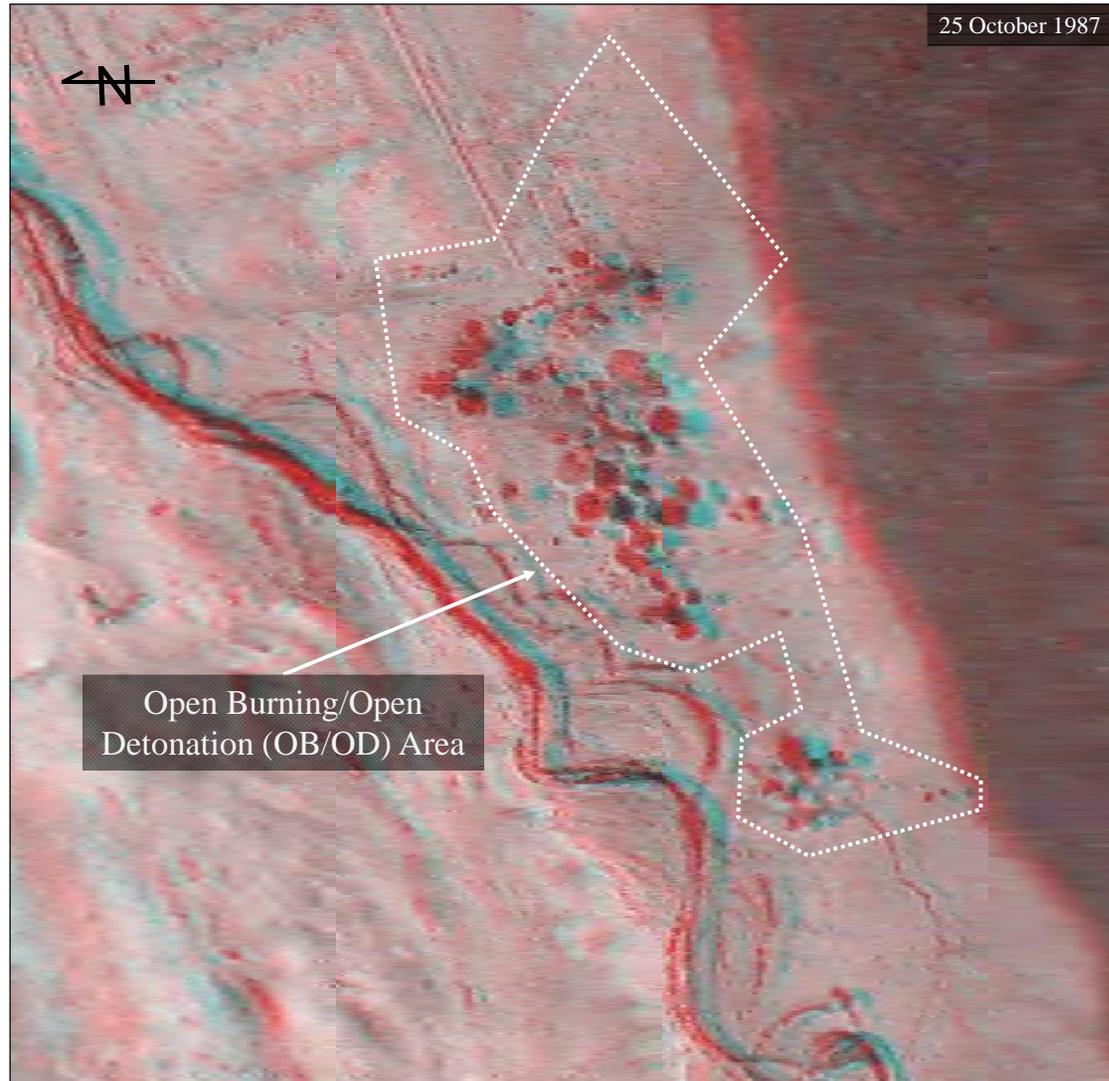
# 3-D AERIAL IMAGE : MOFFETT VALLEY



## 3-D IMAGE NO. 4



To obtain the 3-D effect, images must be viewed with red/blue lens stereo glasses.



25 October 1987

Andrew Lake Open Burning/Open Detonation (OB/OD) area of Moffett Valley as it appeared in October, 1987.

Numerous craters of varying size are apparent on the 25 October 1987 aerial photography.

This area was used to detonate or burn excess, waste, or out-of-service munitions in an open-air environment.<sup>1</sup>

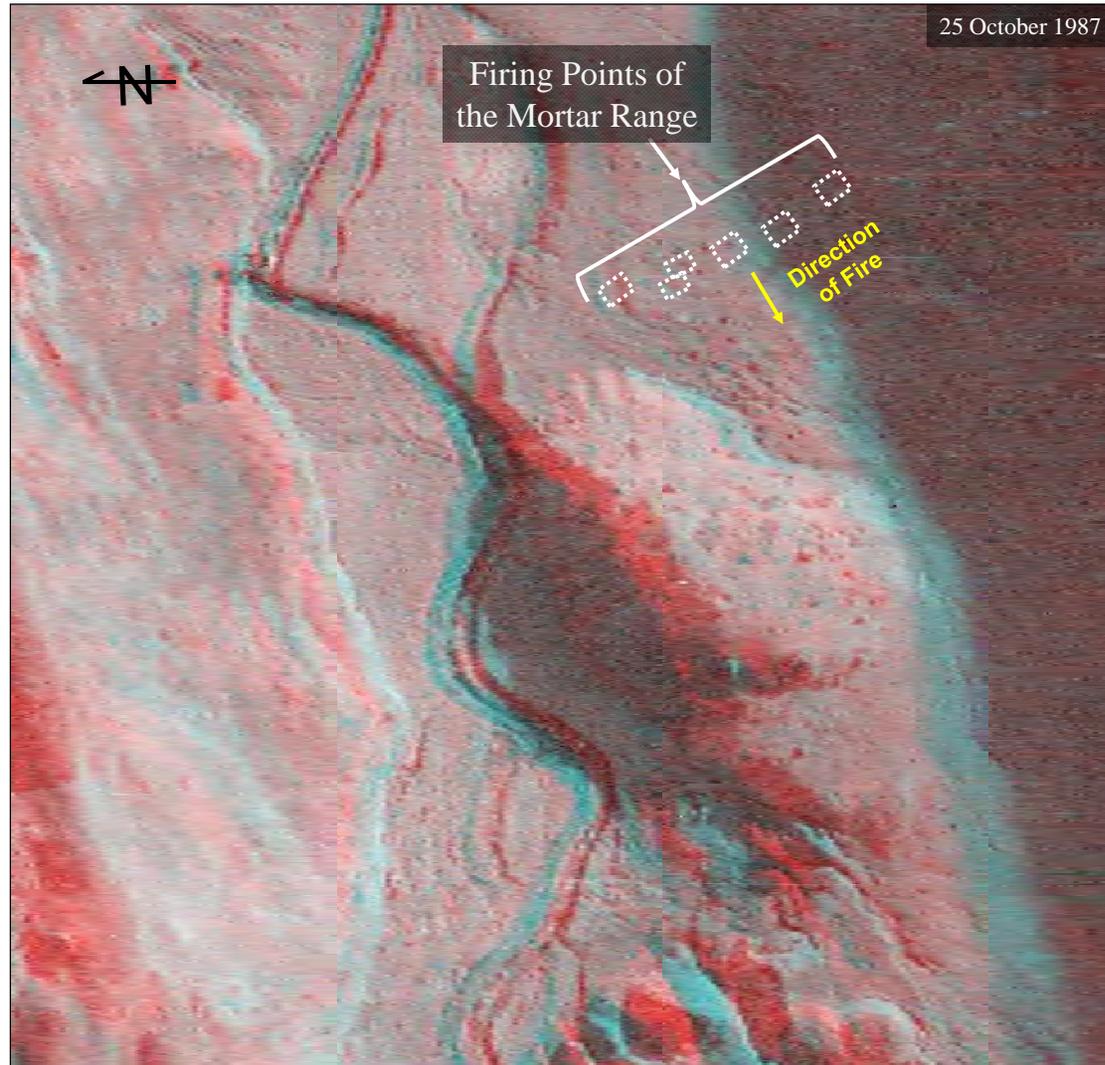
<sup>1</sup>Source: Alaska DEC, Spill Prevention and Response, Contaminated Sites Database, Adak OB/OD-1 Andrew Lake OB/OD Disposal Area.



## 3-D AERIAL IMAGE : MOFFETT VALLEY



### 3-D IMAGE NO. 5



Andrew Lake Mortar Impact Area (SWMU 1-D) and mortar range in Moffett Valley as it appeared in October, 1987.

Impact craters are apparent on the 25 October 1987 aerial photography.

The occurrence of small dark patches appearing on the surface may indicate impact craters that have been seeded by natural plant communities.

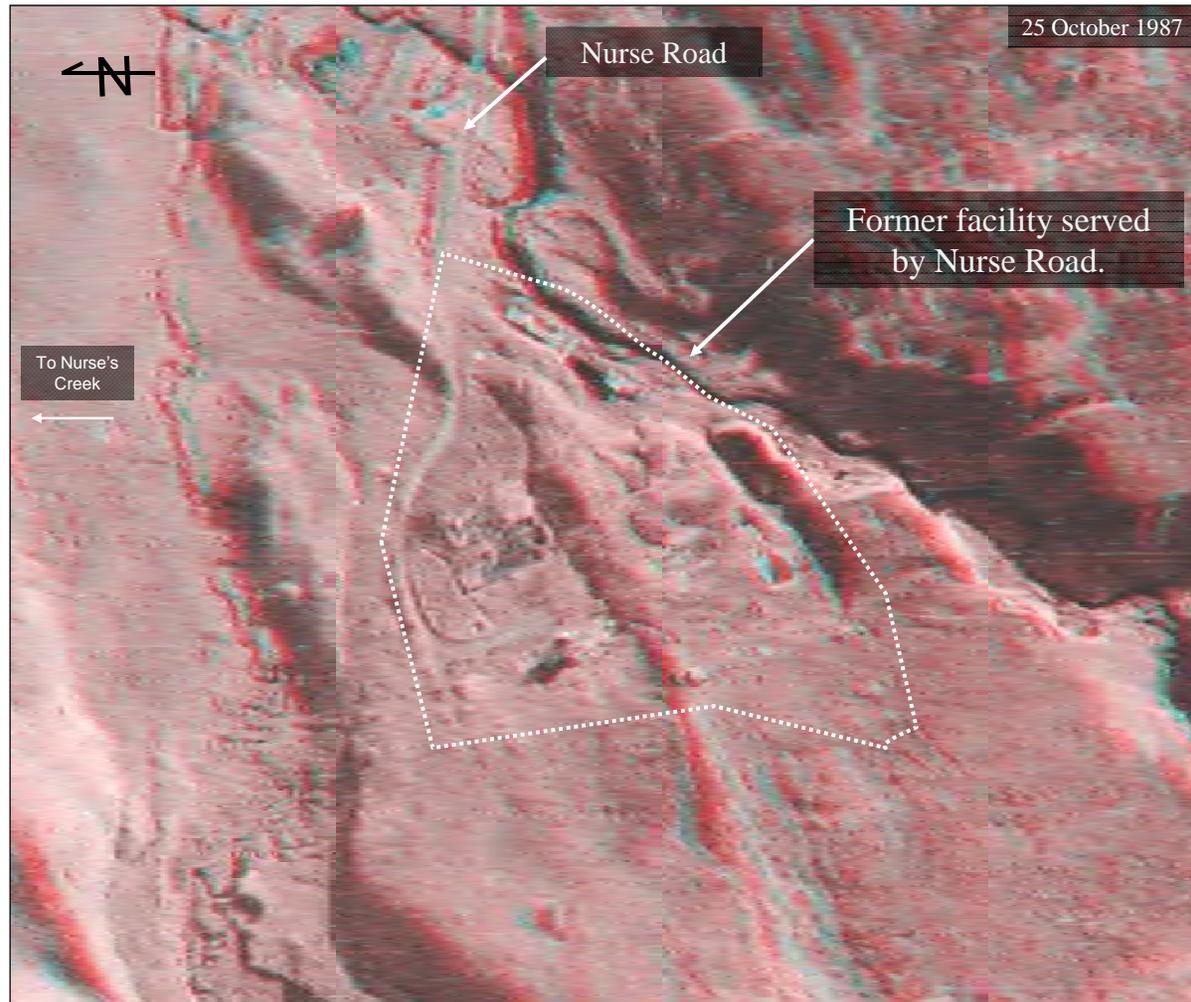
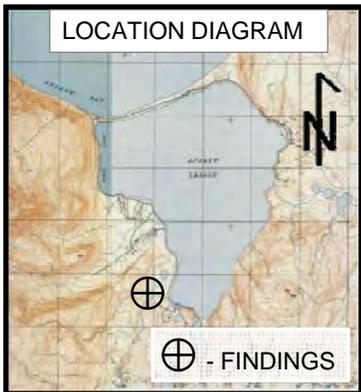
Firing points of the mortar range were first observed on aerial photography dated 29 July 1974.



## 3-D AERIAL IMAGE : MOFFETT VALLEY



### 3-D IMAGE NO. 6



An unnamed former installation located just south of Nurse's Creek at the terminus of Nurse Road.



# AERIAL PHOTOGRAPHS AND SATELLITE IMAGERY

## SOURCE LIST

SOURCE	DATE	REMARKS
NHHC	1944, 12 Apr	B&W vertical aerial mosaic; snow.
NARA	1944, 19 Sep	B&W oblique aerial photo; Andrew Lake Seawall looking northeast; low elevation photograph.
NARA	1946, 19 Dec	B&W vertical aerial photos; partial coverage only.
NARA*	1951, 20 Jul	B&W vertical aerial photos.
NARA	1955, 03 Dec	B&W oblique aerial photo; Andrew Lake; distant oblique aerial view looking north.
USGS	1974, 29 Jul	B&W vertical aerial photos; small scale imagery
AERO	1987, 25 Oct	B&W vertical aerial photos.
USN	2001, 12 Aug	Color ortho-rectified aerial photography.
NGA	2006, 26 May	Digital Globe high resolution commercial satellite imagery.
NGA	2012, 14 Jan	Digital Globe high resolution commercial satellite imagery (included in GIS package only); snow.

AERO = Aerometric, Inc.

B&W = black & white

NARA = National Archives & Records Administration

NGA = National Geospatial-Intelligence Agency

NHHC = Naval History & Heritage Command

USN = U.S. Navy



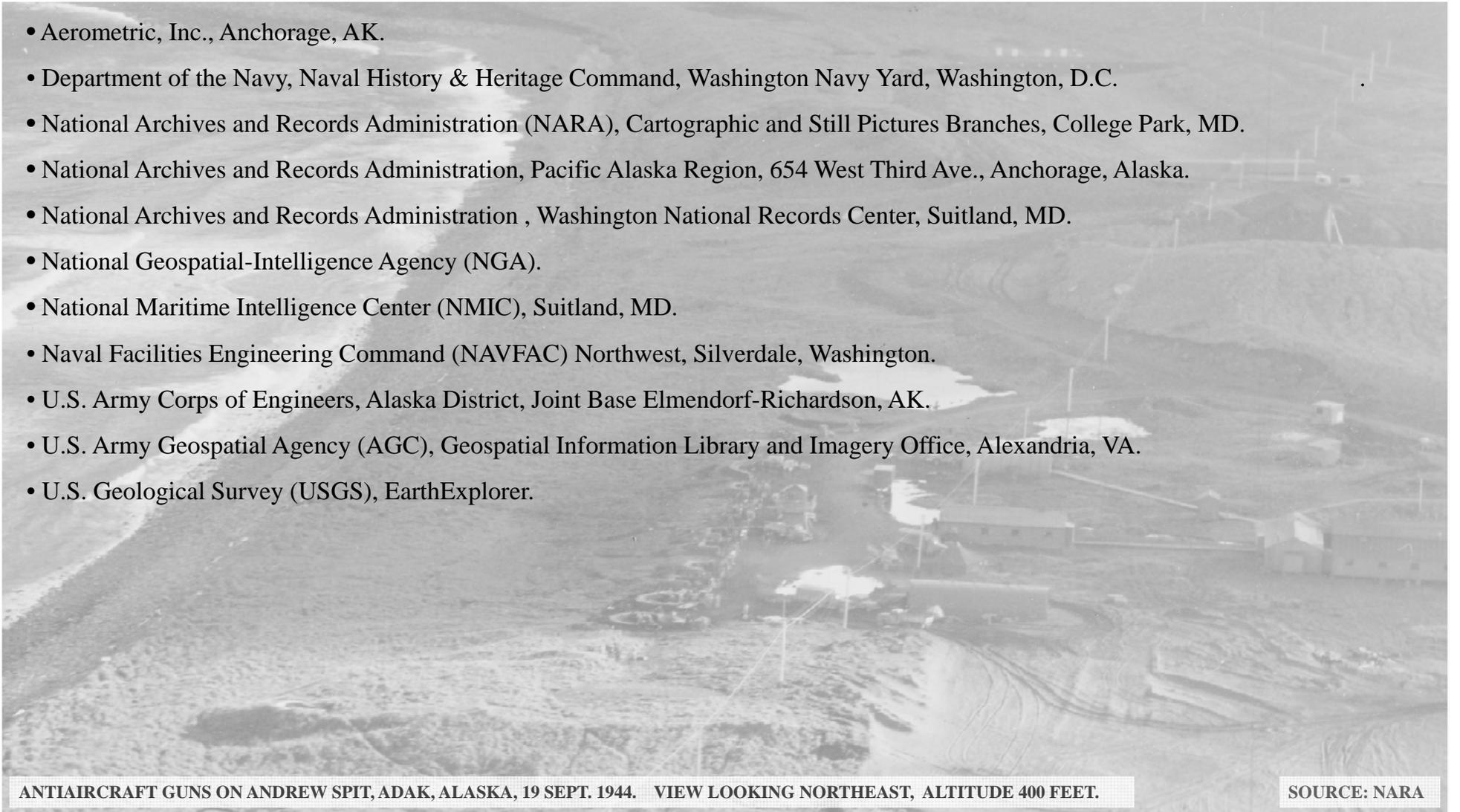
Adak, Alaska: vertical black & white aerial mosaic. This aerial mosaic is an example of the information that was located and acquired by the U.S. Army Geospatial Center.

\* The 20 July 1951 aerial mission data, flown by Patrol Squadron Sixty One, USN, was located by AGC at the Washington National Records Center of NARA in Suitland, Maryland. The film canister of 1951-dated original negatives, currently owned by the National Maritime Intelligence Center (NMIC), U.S. Navy, has not yet been released to NARA for permanent retention.



## SOURCES OF INFORMATION

- Aerometric, Inc., Anchorage, AK.
- Department of the Navy, Naval History & Heritage Command, Washington Navy Yard, Washington, D.C.
- National Archives and Records Administration (NARA), Cartographic and Still Pictures Branches, College Park, MD.
- National Archives and Records Administration, Pacific Alaska Region, 654 West Third Ave., Anchorage, Alaska.
- National Archives and Records Administration, Washington National Records Center, Suitland, MD.
- National Geospatial-Intelligence Agency (NGA).
- National Maritime Intelligence Center (NMIC), Suitland, MD.
- Naval Facilities Engineering Command (NAVFAC) Northwest, Silverdale, Washington.
- U.S. Army Corps of Engineers, Alaska District, Joint Base Elmendorf-Richardson, AK.
- U.S. Army Geospatial Agency (AGC), Geospatial Information Library and Imagery Office, Alexandria, VA.
- U.S. Geological Survey (USGS), EarthExplorer.



ANTI-AIRCRAFT GUNS ON ANDREW SPIT, ADAK, ALASKA, 19 SEPT. 1944. VIEW LOOKING NORTHEAST, ALTITUDE 400 FEET.

SOURCE: NARA