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SURVEY REPORT OF IKKATTEQ, BLUIE EAST 2 (BE-2)

SEMERSOOQ MUNICIPALITY, EAST GREENLAND

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Cover Photo: Harmsen taking dGPS control point on cement foundation at BE-2 (photo: H. Lange 2018).

Special thanks to: Ivan Petersen, Frank Rasmussen and the crew of the M/V Adolf Jensen for transport and logistical assistance. Also sincerest thanks to Jeff Lakaszcyck, Warren Richardson, Taigh Ramey of the Stockton Field Aviation Museum and Allan Lynge for their help with identification of vehicles and heavy machinery at BE-2.

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MANAGEMENT SUMMARY

Between 23-25 September 2018, Nunatta Katersugaasivia Allaqaateqarfialu (NKA) conducted a field survey of the abandoned American military airbase of Ikkatteq, Bluie East 2 (BE-2) in East Greenland (N 65.947222°, E -36.663889°). The investigation and reporting were requested at the behest of the Steering Committee for the clean-up of American bases in Greenland, from the period 2018-2023. BE-2 represents an important and interesting historic landscape representative of the American military presence in East Greenland between ca. 1942-1947. In addition to tens of thousands of empty fuel barrels, the area is replete with World War II-era vehicles and equipment, remains of buildings, cement foundations, earthwork anti-aircraft defenses and a vast quantity of infrastructure materials and diagnostic surface artifacts. Although there is a considerable amount of debris still present at BE-2, it was evident that salvage and collection of small- to medium-sized objects at BE-2 has taken place over the past 70 years by both local Greenlanders and foreign visitors.

The NKA now considers that BE-2's historic heritage features have been acceptably registered and documented in accordance with *Inatsisartutlov nr. 11 af 19. maj 2010 om fredning og anden kulturarvsbeskyttelse af kulturminder § 1-2, 11-15* and *Inatsisartutlov nr. 8 af 3. juni 2015 om museumsvæsen § 1,3 and 24*. The NKA thus determines that no further field investigations are necessary and no further protective heritage measures are required at BE-2, Ikkatteq, prior to the scheduled clean-up activities.

However, based on the findings of the 2018 survey of BE-2, Ikkatteq, NKA considers that the following features and objects are of significant historic value and strongly recommends that they should, if at all possible, remain undisturbed. These include:

- Vehicles and pieces of heavy machinery;
- All heavy and stationary man-made objects (e.g. boilers, furnaces, generators, concrete foundations, etc.);
- All earthwork anti-aircraft defense fortifications.

These features and objects pose no current threat to the environment and possess significant cultural historic value by virtue of their diagnostic characters. Present and future generations will benefit from continuing being able to visit and observe these historic objects and features in their current setting at BE-2.

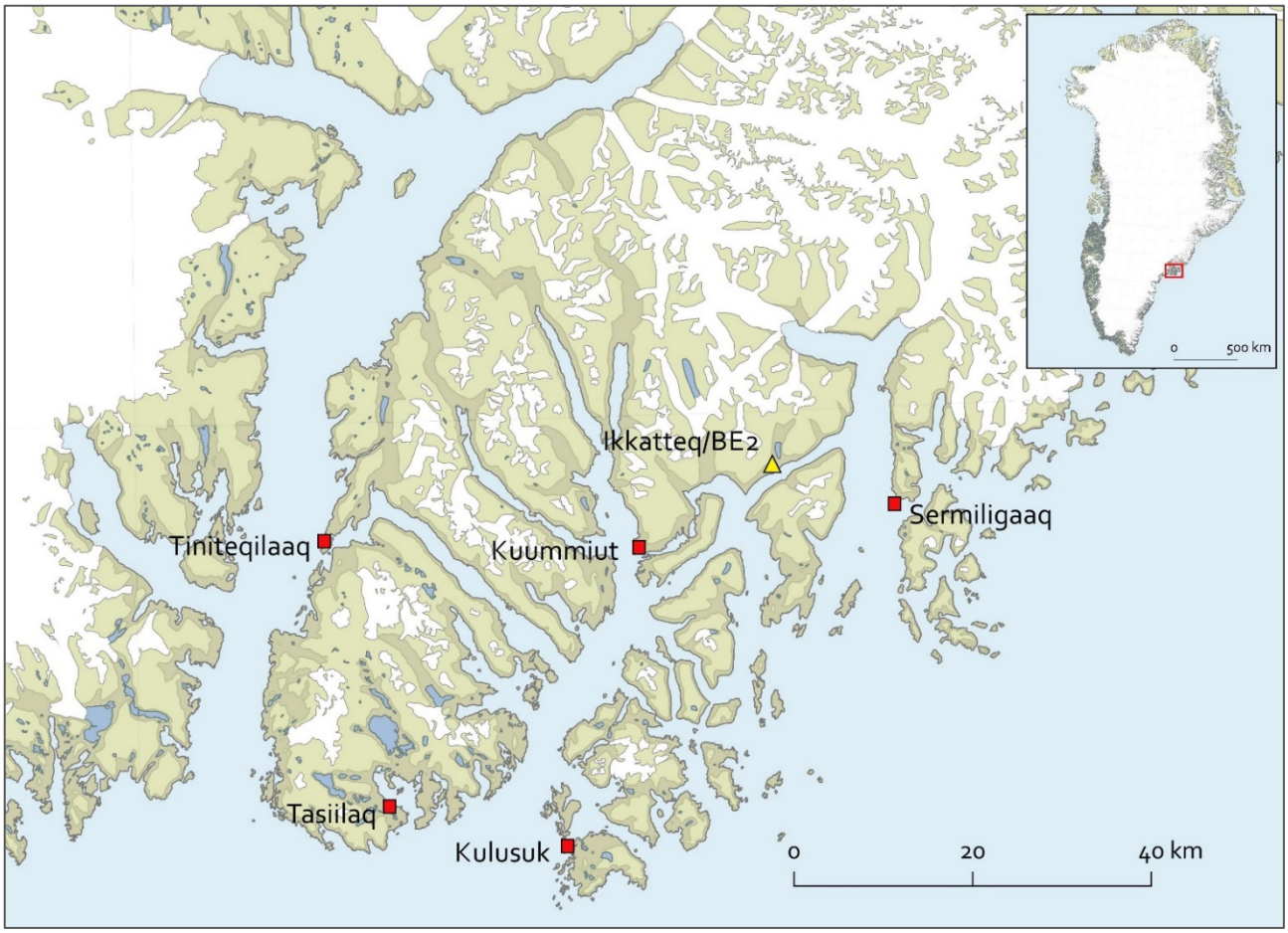

Fig. 1. Bluie East 2 (BE-2) is located in the Ikkatteq Fjord on the East coast of Greenland. BE-2 is approximately 57 km (31 nautical miles) to the northeast of present day town of Tasiilaq. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

INTRODUCTION

This document reports the findings of Nunatta Katersugaasivia Allaqaateqarfialu's (NKA) field survey of the abandoned American military airbase of Ikkatteq, Bluie East 2 (hereafter, BE-2) in East Greenland (Fig. 1), performed between 23-25 September 2018. BE-2 is situated at roughly 57 kilometers (31 nautical miles) northeast of Tasiilaq at N 65.947222°, E -36.663889°. The investigation and reporting were requested at the behest of the Steering Committee in advance of a scheduled clean-up of the site beginning in 2019. Documentation of the site comprised pedestrian walk-overs and unmanned drone flyovers to identify significant cultural assets at BE-2 and provide recommendations to the Steering Committee as to what remnant artifacts and/or WWII era features may constitute consideration for protection. The effort is part of a new, and on-going initiative by the NKA to investigate the historical legacies of the US military in Greenland during the Second World War and post-war period. This period informs an important part of Greenland's strategic role in the Allied defense of Europe and the substantial consequences the US military presence in Greenland had on the Greenlandic society and people.

Table 1. Names and locations of US military installations in Greenland during the Second World War.

Code Name	Local name and description	Northing	Easting
Bluie East One	Torgilsbu radio and weather station	60.15°	-43.883333°
Bluie East Two	Ikkatteq airfield with radio and weather station	65.947222°	-36.663889°
Bluie East Three	Gurreholm radio and weather station	70.5°	-25°
Bluie East Four	Ella Island radio, weather, and sledge patrol station	72.85°	-25°
Bluie East Five	Eskimonæs radio and weather station captured by German troops in 1943 and later reestablished at Myggbukta	73.491111°	-21.540556°
Bluie West One	Narsarsuaq Air Base	61.166667°	-45.433333°
Bluie West Two	Kipisako, airfield on Coppermine Bay	61°	-48°
Bluie West Three	Simiutak HF/DF station	60.683333°	-46.566667°
Bluie West Four	Marrak Point radio and weather station	63.45°	-51.183333°
Bluie West Five	Aasiaat radio and weather station	68.709722°	-52.869444°
Bluie West Six	Thule, radio and weather station	76.531111°	-68.703056°
Bluie West Seven	Kangilinnguit base	61.233333°	-48.098611°
Bluie West Eight	Sondrestrom Air Base	67.010556°	-50.709167°
Bluie West Nine	Cruncher Island light and radio beacon	66.05°	-53.6°

Bluie East Two – a brief history

When Nazi Germany invaded and occupied Denmark in 1940, Greenland fell under the protection of the United States and became a strategically important asset to the Allies from 1940-1945. The strategic value of Greenland during the war was three-fold: (1) Greenland was geographically ideal as a refueling stop-over for planes flying between North America and Europe; (2) at the time, Greenland possessed one of the only functioning cryolite mines in the world at Ivitut (chryolite was a vital component used in the production of aircraft aluminum); and (3) weather conditions in Greenland helped to accurately forecast weather conditions in Western Europe. During the war years the United States constructed several support bases, airfields, radio and weather stations throughout the country. “Bluie” was the US code identifier for Greenland during WWII, with direction and number identifying the bases location as either East or West along Greenland’s coasts. The majority of Bluie installations (Table 1) were closed in the years following the war, however two bases, Bluie West One (Narsarsuaq Air Base) and Bluie West Eight (Sondrestrom Air Base) were converted into commercial airports (Narsaruaq, UAK and Kangerlussuaq, SFJ) and are still in use today. Bluie West Six (Thule Air Base/Pituffik Airport, THU) continues to operate as a US Air Force strategic air command installation and garrison for the 821st Air Base Group in northwest Greenland.

During World War II, five installations were constructed along the East Coast of Greenland, with BE-2 serving (Fig. 2) primarily as an alternate airfield and support hub for weather monitoring, navigation, and search-and-rescue operations (Hansen 1994). On 26 July 1942, the United States Coast Guard (led by the USCGC Comanache) landed construction crews at BE-2 to complete a 1.2 km (4,000 ft.) gravel runway and infrastructure complex to support a moderate sized contingent of soldiers and personnel. On 1 November 1942, BE-2 began reporting weather and the runway was completed the following year. During the war years BE-2 is noted for a few important historical activities. In 1943, the base was used as a staging point for a

Fig. 2. Historic areal photograph of BE-2. The base functioned as an alternate airfield and support hub for weather monitoring, navigation, and search-and-rescue operations. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

bombing raid against a German weather station at Sabine Island, approximately 965 km to the north (however, the raid failed due to inclement weather). From 1942-1943, personnel from BE-2 were involved in several rescue operations on the ice cap and supported outlying stations at Walrus Bay (Scoresbysund) and Comanche Bay (Carlson 1962). After the end of the war, BE-2 became redundant and was eventually evacuated in 1947 along with several other American stations in Greenland. The airstrip remained useful for ad hoc air operations and was briefly re-opened in 1958 to support the construction of the early warning radar station, DYE-4 at Kulusuk.

After the base was decommissioned in 1947, the Danish government had no interest in the facility. Much of the equipment, fuel, wood and other materials at BE-2 were scavenged and re-purposed by local Greenlanders. In recent decades the base has become a point of interest for tourists visiting Kulusuk and

Fig. 3. Satellite image of BE-2 with general borders deliminated. The base is primarily defined by the 1.5 km runway and the main camp to the northeast. Image courtesy of Googgle Earth 2018.

Tasiilaq, and local tour operators continue to bring visitors on day-trips to inspect the remains of the base. It is suspected that many of the small items left on the ground at BE-2 has been collected by tourists as souvenirs; especially small portable items, hardware and removable parts from vehicles.

Study Area

BE2 is situated in a large alluvial shelf that looks over a narrow inlet of the Ikkatteq Fjord. The area is generally characterized as a mountainous landscape with acidic bedrock of anorthosite–granite complexes rich in quartz, feldspar, biotite, pyroxene, and garnet (Daniëls and de Molenaar 2011). This part of East Greenland is categorized as the Low Arctic (subzone D) (Walker et al. 2005). Vegetation is sparse and comprised mainly of low-growing shrubs and grass varieties with the occasional flower. Wildlife was observed to be scarce at the time of the visit. The limits of the base are undefined but extend over an approximate area of roughly 123 hectares (~1.7 km^2) (Fig. 3). Human impacts to the local environment dating to the World War II and post-War era are ubiquitous with massive earthwork disturbances and infrastructure (water, drainage and electricity), the remains of derelict vehicles and heavy equipment and an estimated several thousand tons of wood, scrap and metal debris observed on the ground surface.

The base is defined from above by a ~1.2 km gravel runway stretching from the southeast to the northwest that runs parallel to the shoreline (Fig. 4). To the northeast of the runway lies the main camp area stretching to the shore of a large lake (Fig. 5) fed by meltwater from the surrounding mountains that drains directly into

the fjord through a small stream that defines the main camp area's eastern edge. From 1943 until the base's closure in 1947, the main camp area contained several specialized buildings (airplane hangar, machine workshops, garages, pumping stations, warehouses, barracks, mess hall, radio and communication centers, administrative offices, etc.) (Fig. 6). Several smaller outposts and buildings were located around BE-2 connected through a network of dirt and gravel roads. Wood, metal and tarpaper remains were observed throughout the camp area (Fig. 7). Although most structures were built on raised wooden frames, several concrete foundations (n=8) were also observed across the site (Fig. 8). Additionally, sixteen (n=16) earthwork anti-aircraft gun defenses are found scattered around B-E2. Most of these constructions comprise dugouts with earthen walls, reinforced by fuel barrels filled with soil (Fig. 9). Several of these defense features still possess the original concrete foundations. To the immediate northeast of the runway's terminus lies a large, graded gravel field and the steel skeleton frame of a large airplane hangar that has collapsed in on itself (Fig. 10). This hangar remains as the only semi-standing building structure at BE-2.

Directly south of the runway on the beach front lies a concentration of discarded vehicles, heavy machinery, building remains and a wooden pier. This area was the harbor area and would have been the used for offloading fuel deliveries, materials and provisions from supply ships. Recent visits by local people to BE-2 were evidenced by a circular stone tent ring, as well as more modern garbage strewn around the harbor area (Fig. 11).

The most overarching feature of BE2 are the extensive fields of empty, rusting 55-gallon aircraft fuel barrels (Fig. 12). Referred to by locals from the area as 'the American flowers' (*Amerikanske blomster*), the discarded barrels cover a collective surface area of approximately three hectares. This figure should be measured against the fact that in many individual locations, barrels may be piled as much as two to three layers deep—making it difficult to statistically approximate the total number of barrels currently present at the site.

Fig. 4. The airstrip runway at BE-2 facing south (photo: H. Harmsen 2018).

Fig. 5. The lake at BE-2. The main camp area extended to the southern shore of the lake. Several concentrations of empty fuel barrels are observed in this area (photo: H. Harmsen 2018).

Fig. 6. An areal view of a portion of the main camp area facing north. The reamins in the photo may likely be the location of the camp machine shop or maintnence garage (photo: H. Harmsen 2018).

Fig. 7. Scraps of wood, metal and tarpaper were observed throughout the camp area at BE-2 (photo: H. Lange 2018).

Fig. 8. Several concrete building foundations were observed at BE-2 (photo: H. Lange 2018).

Fig. 9. Sixteen (n=16) earthenwork anti-aircraft gun defenses are found scattered around B-E2. Myrup and Harmsen observed inspecting the feature (photo: H. Lange 2018).

Fig. 10. The collapsed hangar is as the only semi-standing building structure at BE-2 (photo: H. Harmsen 2018).

Fig. 11. Evidence of recent visits by locals to BE-2. A stone tent ring and modern trash was observed in the area immediately adjacent to the old wooden pier. The harbor crane can be seen in the background of the photo (photo: H. Lange 2018).

Fig. 12. Dramatic images of the barrel fields at BE-2 (photos: Ken Bower, 2016, from http://www.ken-bower.com/ (reproduced here without permission).

RESULTS OF SURVEY

The following section details the highlights of the survey performed between 23-25 September 2018 at BE-2. Discussion is divided between sub-sections that specifically address: (1) buildings and infrastructure: (2) earthwork defenses; (3) vehicles and heavy equipment; (4) barrels; and (5) World War II era artifacts.

Buildings and infrastructure

Between 1942-1947, BE-2 possessed a significant number of buildings and work facilities, the vast majority constructed of wood and tar paper. Wood appeared to be primarily utility grade pine. The largest building remains at BE-2 consisted of the large steel and concrete airplane hangar, the only semi-standing building remaining at the site. Presently, no schematic plans of BE-2 have come to light that would reveal the specific number and function of buildings at the base for the years 1943-1947, making all current interpretations speculative. However, based on a historic areal photo taken between 1944-1945, prior to the war's end there

were at least forty-four (n≈44) structures in the main camp area (Fig. 13). We can presume that there were many other smaller structures as well scattered across the site, but unidentifiable due to the resolution and scale of the original photograph.

Since time was limited during the site visit in 2018, it was not possible to completely identify the footprints of all buildings with absolute certainty. BE-2 currently possesses somewhere in the area of 3.66 hectares (36,600 m^2) of wooden building debris lying on the surface (Fig. 14). Much of this debris has been heavily disturbed through salvage, strong winds and the breakdown of the base during the decommission at the end of 1947. Simply based on the concentrations of wooden building materials, we approximate that there were at least 90-100 buildings present at BE-2 over the course of the base's lifetime.

Several buildings also possessed concrete foundations (n=8) (Fig. 15). These foundations are distinguished separately from the anti-aircraft gun emplacements that also possessed concrete foundations.

In terms of remnant base infrastructure, BE-2 possessed several roads, earthworks and one bridge. A complex water delivery system serviced the camp. At the time of the visit in 2018, water could still be heard to be flowing into and out from the original catchment well (Fig. 16). A large industrial pump was observed in the northwest part of the camp of the site would have transported water throughout the base (Fig. 17). Broken and rusting water pipes with decomposing insulation criss-crossed the entire camp area, as well as a complex ditch and buried drain pipe system that would have helped to direct snow melt and keep the lower areas of the camp area from becoming inundated during the spring/summer thaw (Fig. 18).

BE-2 also required a highly sophisticated electrical and telephone grid to keep operations functioning. Electricity was derived from several gas generators, the largest of which was a LeRoi engine stationed next to the hangar inside a protective steel enclosure (Fig. 19). Fallen electrical posts, tangled wires, broken ceramic insulators and electrical hardware were observed in all parts of the camp area. As shown in Fig. 20, BE-2's electrical grid and connecting telephone communications were quite extensive and ran in-between the various buildings on the base.

Like many remote outposts in Greenland at the time, BE-2 was required to be self-sufficient with its internal operations, often requiring personnel to be stationed at the base for long stretches. A few photos have survived that show some of the building at BE-2 from 1944-1945, shown in Figs. 21-22.

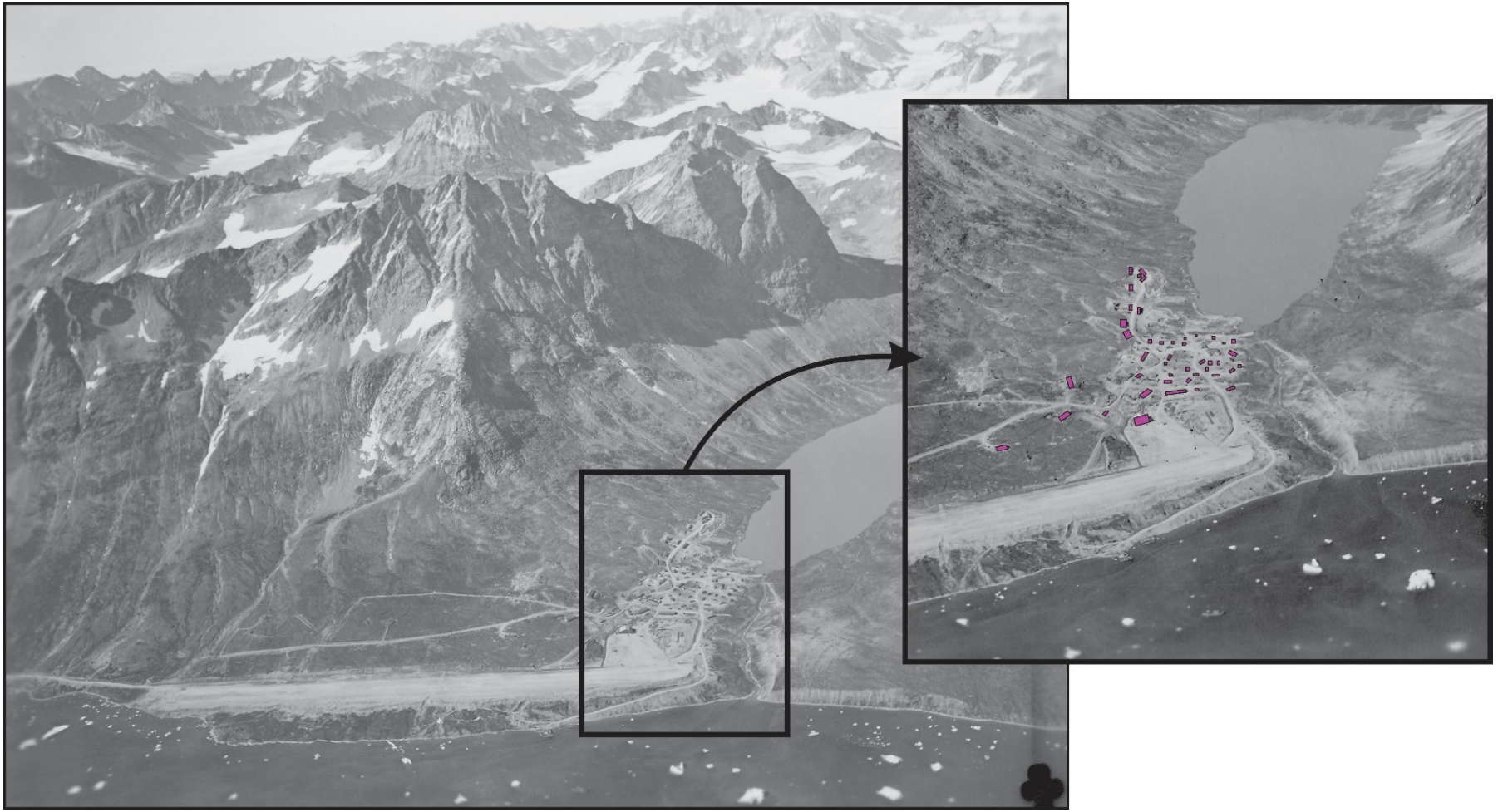

Fig. 13. A close-up inset of the main camp area at BE-2, ca. 1944-1945. A total of forty-four (n=44) buildings can be confirmed in the photo (shown highlighted in pink), Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

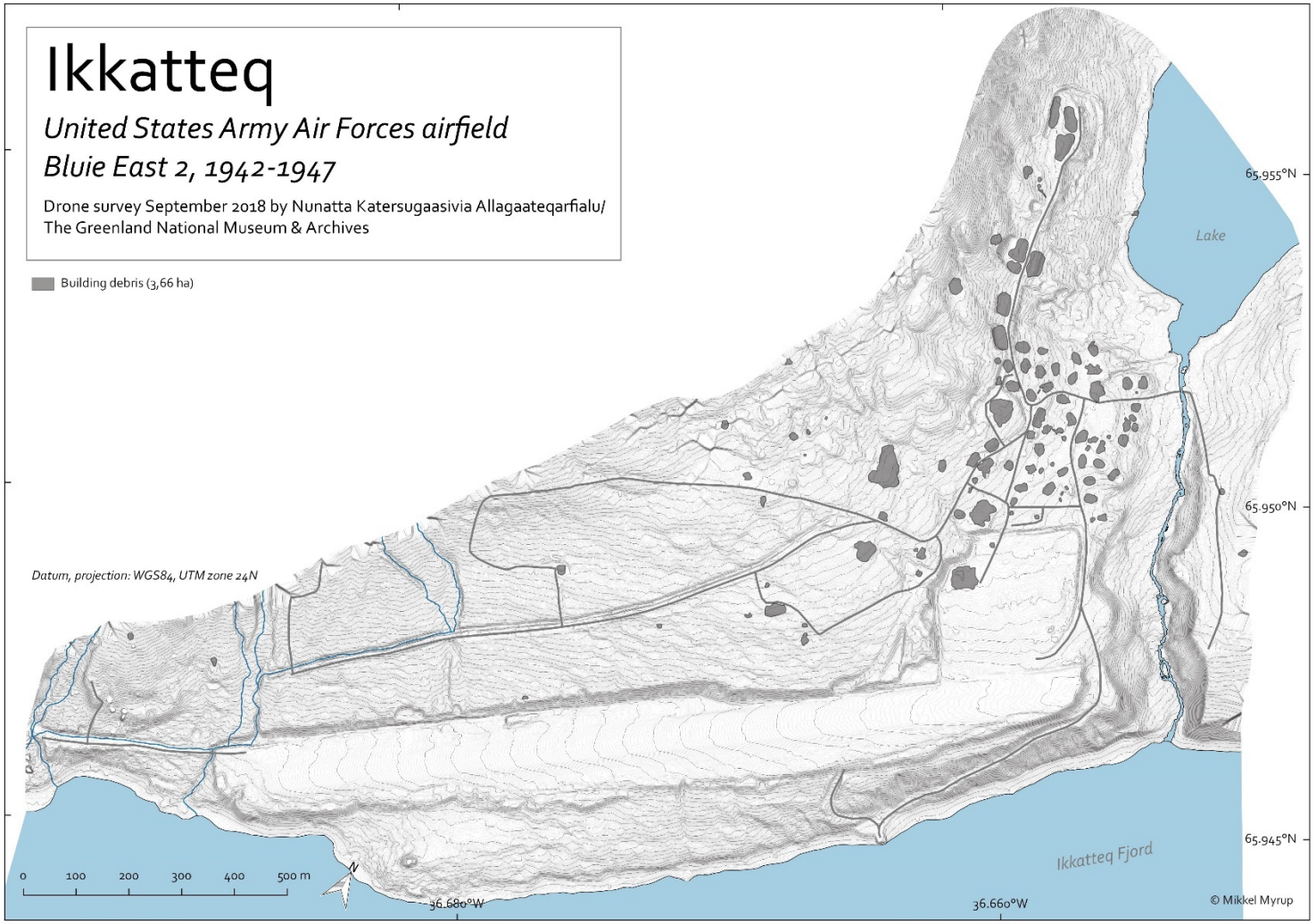

Fig. 14. Map showing building wooden building debris observed at BE-2 in September 2018. Debris cover a combined surface area of 3.66 hectares (36,600 m^2). Much of this debris has been heavily disturbed through salvage, strong winds and the breakdown of the base during the decommission at the end of 1947 making it difficult to estimate the total number of building structures at BE-2. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

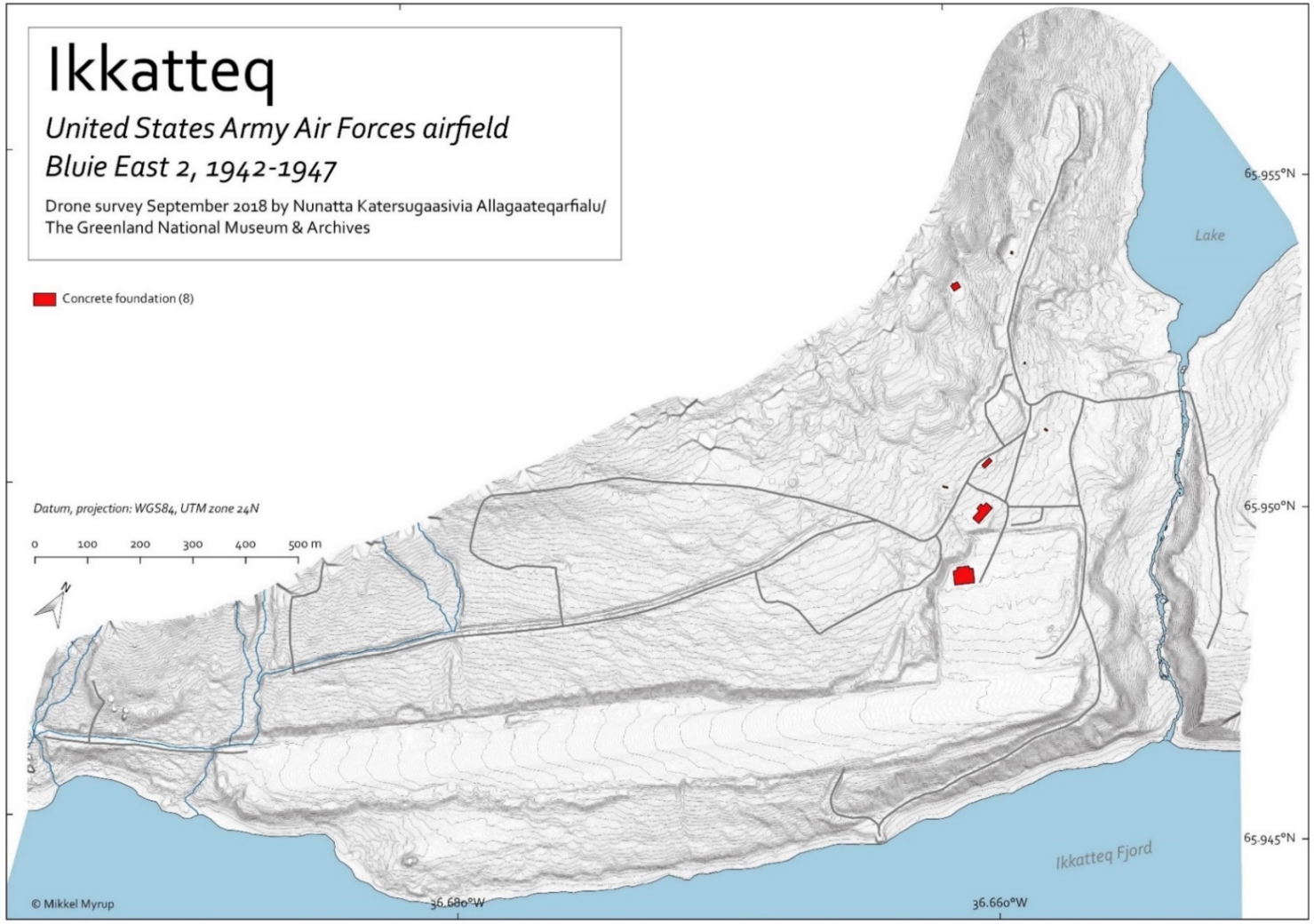

Fig. 15 Map showing eight (n=8) concrete foundations observed at BE-2 in September 2018. Locations of concrete foundations shown in red. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

Fig. 16. A corrugated metal housing resting on top of the camp water catchment well at BE-2. At the time of the visit in 2018, water could still be heard to be flowing into and out from the well (photo; H. Lange 2018).

Fig. 17. A large pump was observed near the well in the northwest part of the camp of BE-2. This large industrial pump would have transported water throughout the base (photo: H. Lange 2018).

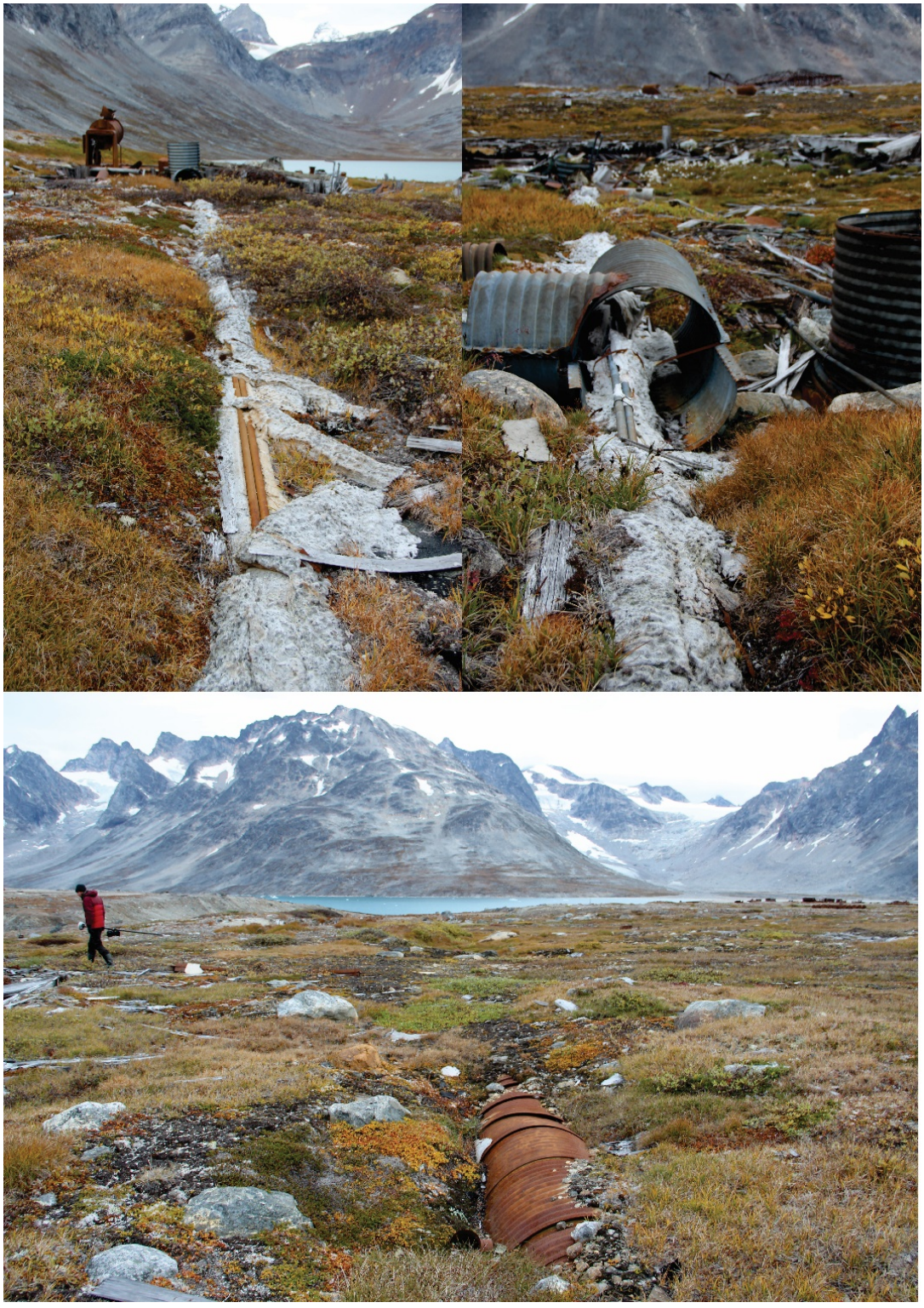

Fig. 18. Broken and rusting water pipes with decomposing insulation crossed the camp area at BE-2. A complex ditch and buried drain pipe system also would have helped to direct snow melt and keep the lower areas of the camp area from becoming inundated during the spring/summer thaw (photos: H. Lange, 2018).

Fig. 19. A LeRoi engine, gas powered generator stationed next to the hangar inside a protective steel Enclosure at BE-2 (photos: H. Lange 2018).

Fig. 20. BE-2's electrical grid and connecting telephone communications. The grid was quite extensive and ran in-between the various buildings on the base. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

Fig. 21. Historic photo of buildings at BE-2, facing northeast. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

Fig. 22. Historic photo of buildings at BE-2, facing southeast. A large truck (possibly Sterling HC 145) with fuel tank. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

Earthwork defenses

Several Heavy Anti-aircraft (HAA) earthwork defense systems (*n*=16) were observed at BE-2 (Table 2, Fig. 23). Most of these features were dugouts with short earthen walls (~.5 m deep) reinforced by empty 55-gal. fuel barrels filled with soil. Four constructions possessed concrete-poured foundations, assumed to be necessary for positioning and securing of large artillery weapons. Fig. 24 provides illustrations of a few selected examples of earthwork defense features observed at BE-2. Figs. 25-26 show the condition of two of the features observed at the time of the survey.

Table 2. Feature numbers and general locations of sixteen (*n*=16) eathwork defense features at BE-2. Approximate interior length and general shape also provided, Four of the features possed concrete poured foundations.

Map and Feature No.	interior length at farthest points (m)	concrete foundation	General shape	Northing	Easting
1	5	X	oval with square extension	65.95°	-36.661°
2	3		figure 8	65.949°	-36.66°
3	5	X	oval with square extension	65.946°	-36.662°
4	3		figure 8	65.946°	-36.663°
5	3.5		circular	65.948°	-36.678°
6	6		circular	65.947°	-36.679°
7	6		circular	65.947°	-36.678°
8	3		circular	65.947°	-36.678°
9	3.75		square	65.947°	-36.676°
10	6		circle	65.947°	-36.679°
11	9.5		trapezoid	65.946°	-36.678°
12	3.25		square	65.946°	-36.677°
13	3.25		square	65.946°	-36.677°
14	4		oval?; collapsed walls	65.946°	-36.676°
15	6.5	X	oval with square	65.938°	-36.698°
16	~6	X	oval	65.936°	-36.7°

Currently, no information has been forthcoming as to the specific artillery weapons kept at BE-2, however Bob Baxter, a radio operator at the base during the war recounts the storage of 90mm anti-aircraft cannons in the hangar (see Appendix I: Memories of Bluie East 2). Historic photos ca. 1944-1945 (Fig. 27 & Fig. 28) show what could possibly be a 37mm M1 or a Bofors 40 mm anti-aircraft gun being used by military personnel on site. This size artillery weapon would accommodate the general dimensions of the concrete reinforced defense feature nos. 1, 3, 15 and 16.

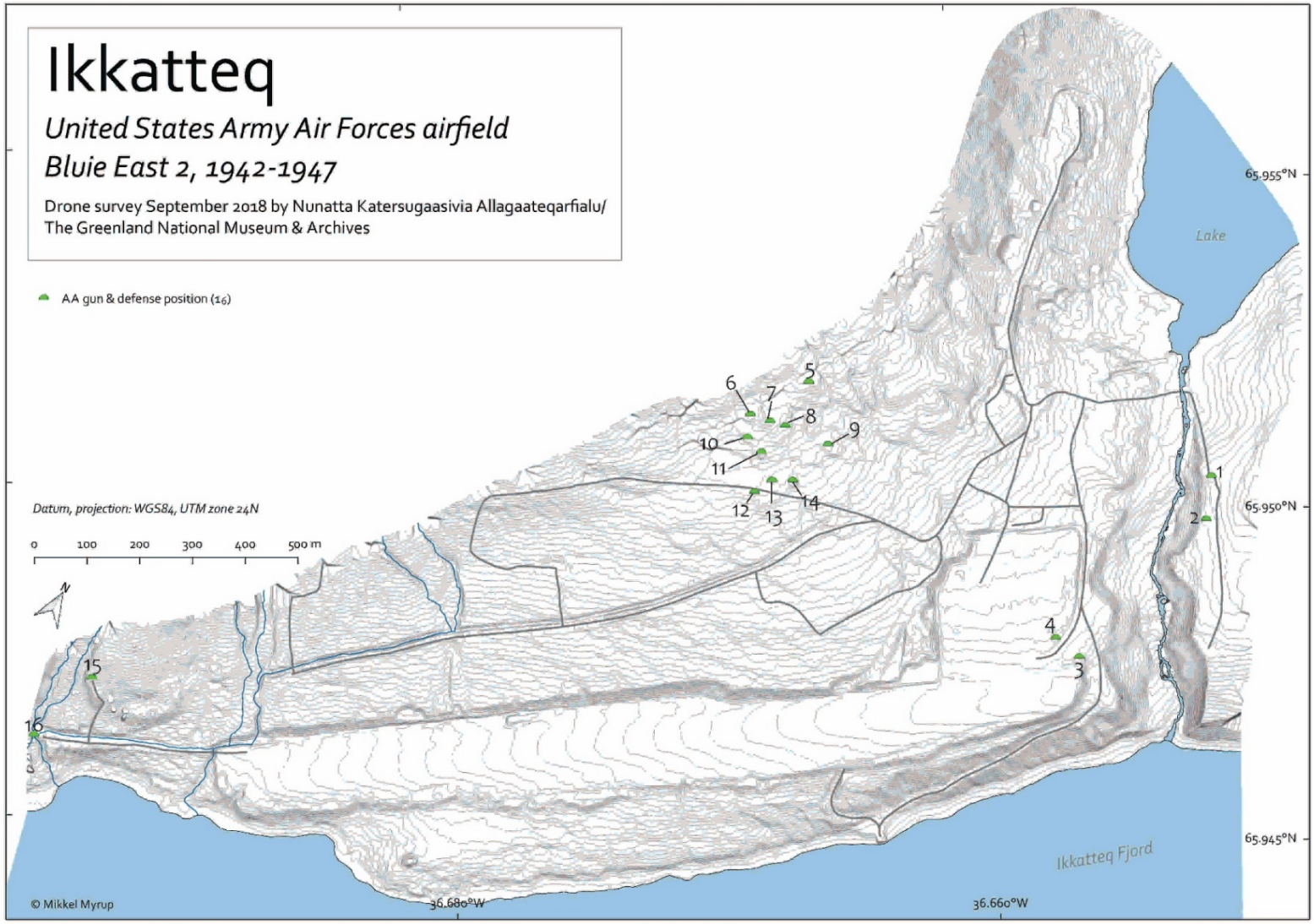

Fig. 23. Map showing locations of earthwork defense (*n*=16) features observed at BE-2 in September 2018. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

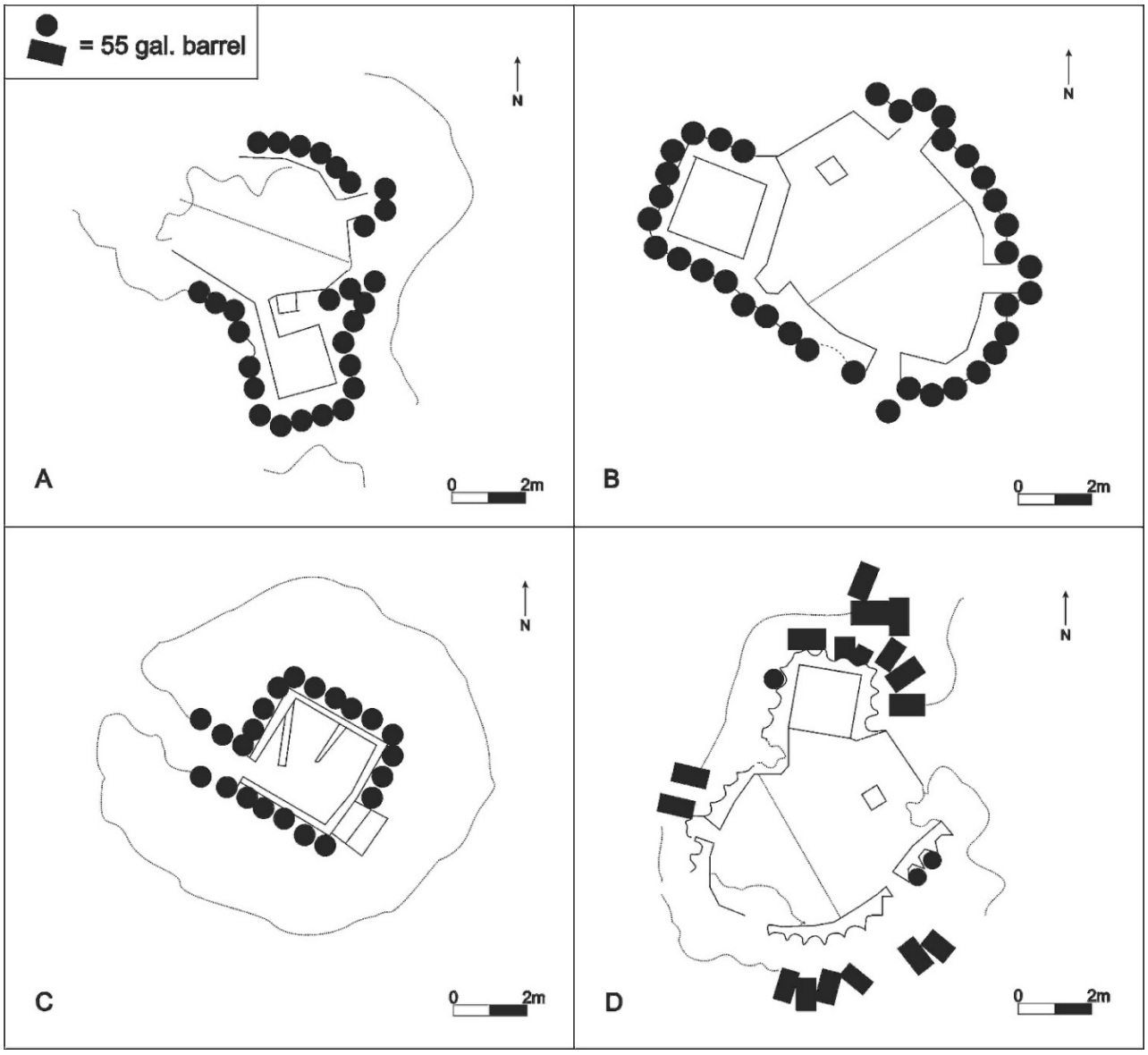

Fig. 24. Sketches showing selected examples of earthwork defense features at BE-2. (A) Feature 1; (B) Feature 3; (C) Feature 9; (D) Feature 15.

Fig. 25. Defense feature 9, facing south (photo H. Lange 2018)

Fig. 26. Defense feature 3, facing east. Harmsen shown collecting a dGPS control point (photo H. Lange 2018).

Fig. 27. US soldiers seen shooting icebergs with a 27. 37mm or 40 mm anti-aircraft gun in the Ikkatteq fjord. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

Fig. 28. Soldiers drilling with an artillery gun overlooking the fjord, facing south. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

Fig. 29. A lonely Sterling HC 145 truck lying derelict at BE-2. Note arrow pointing to the rear axle chain-drive system. Chain-drives assisted navigating difficult terrain and pulling heavy pay-loads at BE-2 (photo: H. Lange 2018).

Vehicles and heavy equipment

The remains of thirty-three (*n*=33) vehicles and pieces of heavy equipment were observed at BE-2 (Table 3, Figs. 32-36). The fleet at BE-2 comprised a wide variety of different trucks and tracked vehicles that ranged from light duty ½ -1½-ton light duty trucks to heavy duty 9 to 10-ton trucks, as well as a rare type of snow tractor (M-7). One mobile radio dish was identified in the collapsed remains of the hangar, but close inspection was impeded due to the fragility of the structure (Fig. 31). Several other types of heavy machinery were also observed that included two road rollers, a small bulldozer, several cold-weather cabs missing engines and chassis as well as the remains of the large tank-treaded crane next to the old pier (Fig. 37 & Fig. 38). Photo identification of the make and model of several vehicles found on-site was aided by the expertise of Jeff Lakaszcyck, Warren Richardson and Taigh Ramey of the Stockton Field Aviation Museum, Stockton, California.

Fig. 30. Mobile radio dish buried in the collapsed remains of the hangar. Close inspection was not possible due to the fragility of the structure (photo: H. Lange 2018).

Sterling and Ford trucks were observed to be the most common vehicle at BE-2 and unique in that they all possessed a rear chain-drive system, a feature that would have made them useful for navigating difficult terrain and pulling heavy pay-loads at BE-2 (shown in Fig. 29). However, the radiators in these vehicles may not have been optimal for Greenland making them unpredictable during periods of extreme cold (Richardson 2018, personal communication). Payloads maxed out at 9 to 10-tons for these types of trucks. Light duty trucks ½ to 1½-ton trucks were also common and were probably important in the continuous transport of fuel barrels around the base (Fig. 39). Fig. 40 shows an illustrative war-time advertisement for the Sterling HC 145 manufactured by the Waukesha Motor Company, Waukesha, Wisconsin. **Supplemental Document I: Trucks and Equipment at Ikkatteq, Greenland**, authored by Warren Richardson, Mechanical Engineer and Sterling Truck Historian, provides a thorough description of the history and technical specifications of the trucks identified at BE-2.

Lastly, one of the most interest discoveries of the survey was the positive identification of the remains of three (n=3) Allis-Chalmers M-7 Snow Tractors (Fig. 41 & Fig. 42). These small half-track vehicles were used for transport in remote and snowy terrain and are extremely rare finds today (Raimey 2018, personal communication). The front axle could be equipped with either wheels or skis and these vehicles are noted for their use in search-and-rescue operations in the Second World War.

Table 3. List and general location of vehicles and heavy equipment observed at BE-2 with make, model and production years provided when possible.

No.	Description	Make	Model	Production Year(s)	Northing	Easting
1	Road roller	-	-	-	65.946°	-36.668°
2	Road roller	-	-	-	65.946°	-36.668°
3	Truck	Sterling	Possibly HC I45 or MC 96	1939-1945	65.946°	-36.668°
4	Truck	Sterling	Possibly HC I45 or MC 96	1939-1945	65.946°	-36.668°
5	Truck	Sterling	Possibly HC I45 or MC 96	1939-1945	65.946°	-36.668°
6	Radio dish	-	-	-	65.946°	-36.668°
7	Truck	Diamond T	968 (G509)	1939-1941	65.946°	-36.668°
8	Truck	Sterling	HC 145	1940-1941	65.946°	-36.668°
9	Truck	Sterling	HC145	1940-1941	65.946°	-36.668°
10	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
11	Truck	Sterling	MC 96	-	65.946°	-36.664°
12	Tactical cargo truck	Reo	Model 23 or 25		65.946°	-36.664°
13	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
14	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
15	Pick-up truck	Dodge	Possibly 1940 1½-ton VC or 1 1½-ton VF model.	1940?	65.946°	-36.664°
16	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
17	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
18	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
19	Truck	Sterling	HC145	1940-1941	65.946°	-36.664°
20	4x4 Truck	Marmon-Herrington Ford	-	1942	65.946°	-36.664°
21	4x4 Truck	Marmon-Herrington Ford	-	1942	65.946°	-36.664°
22	Pick-up truck	Dodge	Possibly 1940 1½-ton VC or 1 1½-ton VF model.	1940?	65.946°	-36.664°
23	Tactical cargo truck	Reo	Model 23 or 25		65.946°	-36.664°
24	Truck	Sterling	HC 145	1940-1941	65.947°	-36.669°
25	Bulldozer	Allis-Chalmers	-	-	65.946°	-36.671°
26	Cab (no engine or chassis)	Unknown	-	-	65.946°	-36.671°
27	Cab (no engine or chassis)	Unknown	-	-	65.946°	-36.671°
28	Cab (no engine or chassis)	Unknown	-	-	65.946°	-36.671°
29	Crane	Loraine	-	-	65.942°	-36.666°
30	Snow tractor	Allis-Chalmers	M-7	1943-1944	65.942°	-36.666°
31	Snow tractor	Allis-Chalmers	M-7	1943-1944	65.942°	-36.666°
32	Snow tractor	Allis-Chalmers	M-7	1943-1944	65.942°	-36.666°
33	Cab (no engine or chassis)	Unknown	-	-	65.942°	-36.666°

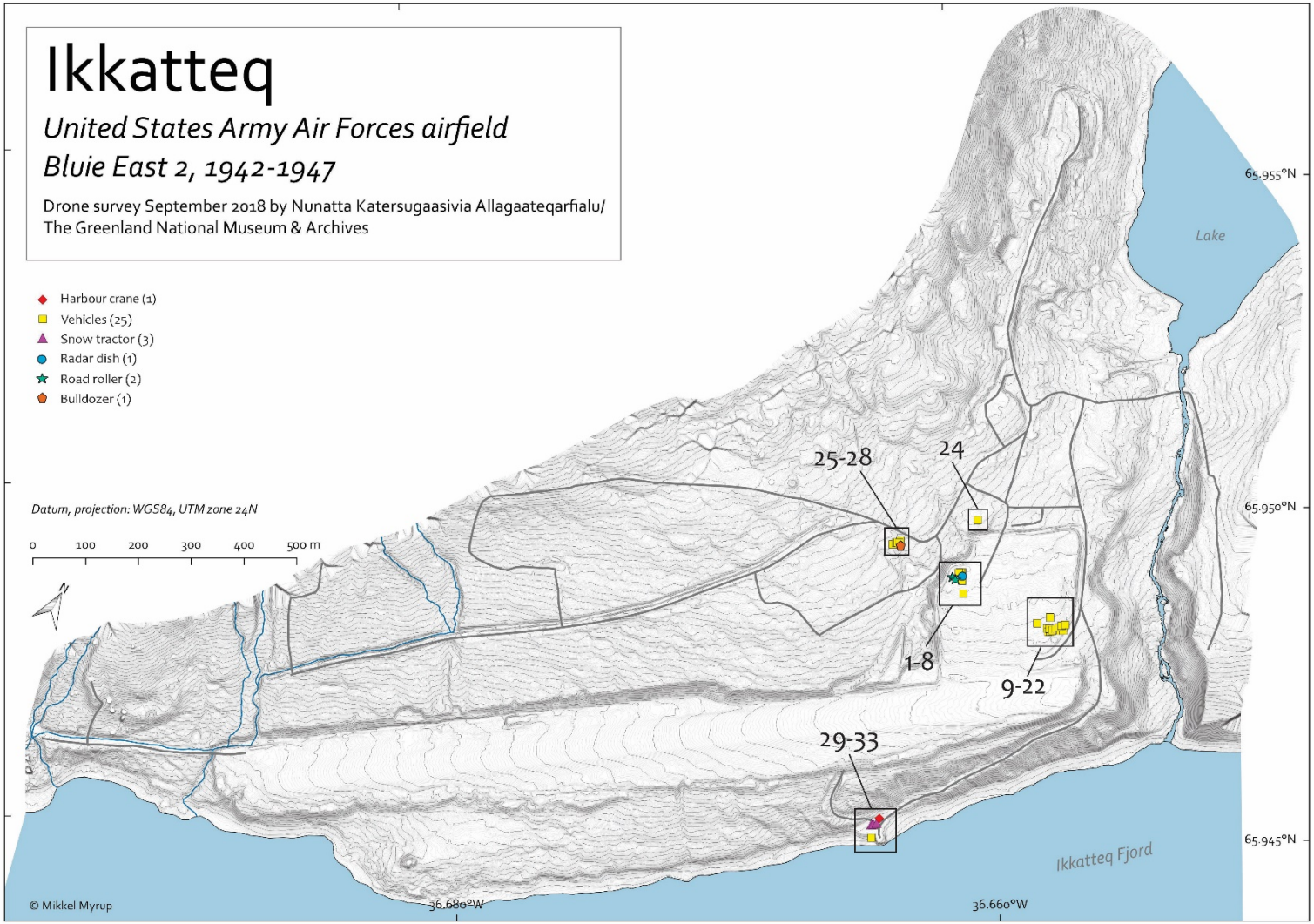

Fig. 31. The remains of thirty-three(n=33) vehicles and pieces of heavy equipment were observed at BE-2 in September 2018. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

Fig. 32. Heavy machinery and vehicle nos. 1-8 shown in in and adjacent to the hangar (N 65.946°, E -36.668°) (photo: Mikkel Myrup 2018)

Fig. 33. Cluster of vehicle nos. 9-23 (N 65.946°, E -36.664°) (photo: Mikkel Myrup 2018).

Fig. 34. Solitary vehicle no. 24 in the remains of what may have been a garage workshop (N 65.947°, E -36.669°) (photo: Mikkel Myrup 2018).

Fig. 35. Cluster of heavy machinery and vehicle nos. 25-28 (N 65.946°, E -36.671°) (photo: Mikkel Myrup 2018).

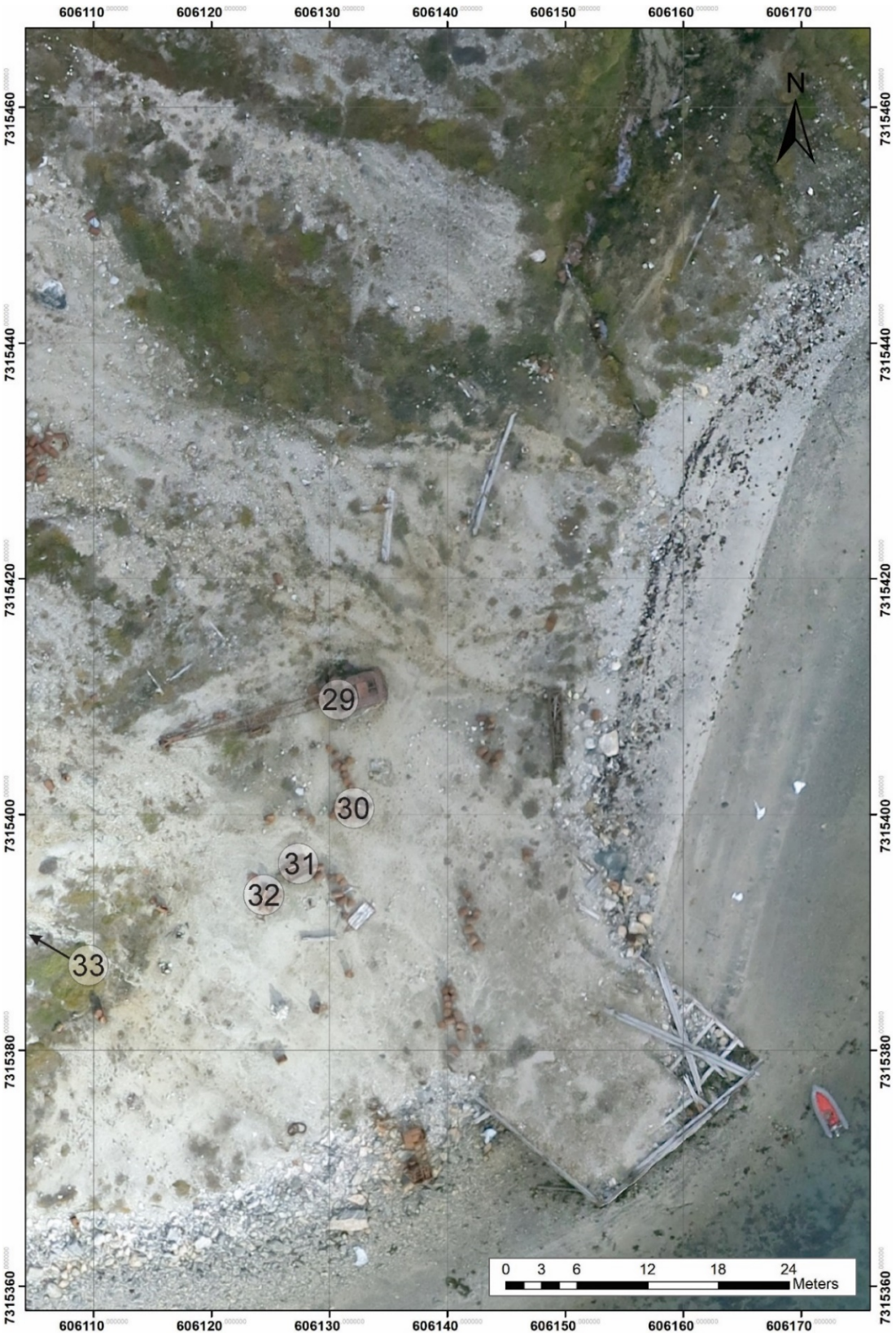

Fig. 36. Cluster of heavy machinery and vehicles near the harbor (N 65.942°, E -36.666°) (photo: Mikkel Myrup 2018).

Fig. 37. Harbor crane (Vehicle no. 29) with tank treads found by the old pier at BE-2 (photo: H. Lange 2018). The Thew Shovel Co., Lorain, Ohio.

Fig. 38. Historic photo of BE-2 harbor, facing northeast with arrow pointing to crane. Staff Sgt. Harry M. Baar photo archive 1944-1945, Greenland National Museum and Archives.

Fig. 39. Examples of derelict vehicles observed at BE-2 in September 2018. (A) Vehicle no. 8, Sterling HC 145 truck, ca.1940-41. 6-cylinder, gasoline SRKR Waukesha engine, 9 to 10-ton payload., (B) Vehicle no. 12, 23. Reo Model 23 or 25. 2 ½-ton 6x6 truck, also known by the nickname 'deuce and a half', or just 'deuce.' This model was designed as a tactical cargo truck for the US Armed Forces. Load-rated (2,300 kg; 5,000 lb) could operate off-road in all weather; (C) Vehicle no. 23, Reo Model 23 or 25; (D) Vehicle no. 24, Sterling HC 145 truck with snow chains still present on the rear tires.; (E) Vehicle no. 11, Sterling MC 96, similar to HC 145 built with 60-inch wide cabs vs. the HC145 64-inch wide cab; (F) Vehicle no. 1, road roller, unknown make and model; (G) Vehicle no. 25, possibly Catepillar; (H) Vehicle no. 26, unidentified cab, no engine or chassis.

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Fig. 40. Waukesha Engines magazine advertisement for Sterling HC 145 truck. *Commercial Car Journal*, August 1941.

Fig. 41. Remains of an Allis-Chalmers M-7 Snow Tractors (Vehicle nos. 31-32). These small half-track vehicles were used for rescue operations in remote and snowy terrain and are extremely rare WW2 relics (photo: H. Lange 2018).

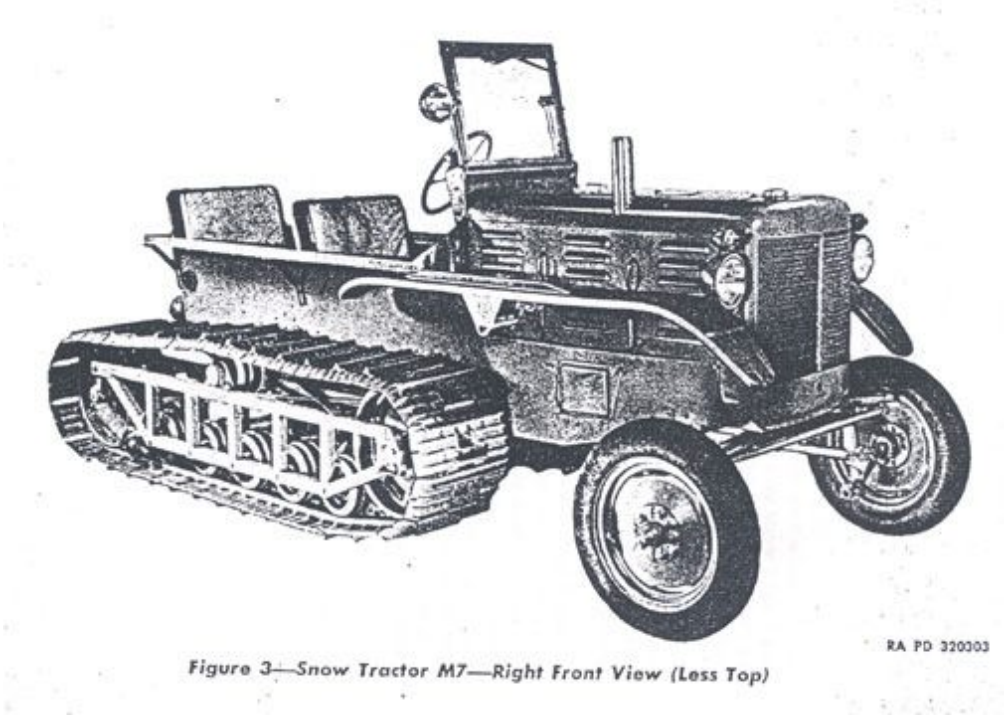

Fig. 42. Technical photograph of the M7 in its day. Length 10 ft. 11 in. Width 5 ft. 3 in. Height 5 ft. 4 in. Weight 2610 lb. Max. Speed 41 mph (US War Department 1944: 7, Figure 3).

Fig. 43. An enormous quantity of empty and rusting 55-gal. barrels are found at BE-2. As seen in the photo, most barrels have corroded significantly allowing any remnant liquids to transfer into the soil (photo: H. Lange 2018).

Barrels

Empty fuel barrels (Fig. 43) cover an approximate surface area of approximately 3 hectares (~28,000 m^2) at BE-2 (Fig. 45). The barrels are 55-gallon drums used for the storage of airplane fuel. An average barrel measures 87 cm x 50 cm in diameter. At the moment, there is no clear estimate on how many barrels are present at BE-2, but various news media have placed the number somewhere around 10,000 (e.g. Lang 2018). Actual numbers may be much higher in the range of 20-30,000.

For the most part, no fuel was observed to be still present in the barrels—this is attributed to the fact that the barrels are highly corroded, and the liquid has been gradually transported into the topsoil. As a consequence, large portions of BE-2 may be contaminated with a high level of lead and other toxic chemical residues.

Large concentrations of barrels are found clustered in many areas at BE-2 (for example, see Fig. 44), but individual barrels are also found strewn across the site from the southern tip of the runway to the northern periphery of the camp on the lake shore. In two areas, barrels have been arranged to form designs that form shapes, such as flowers when observed from above (Fig. 46 & Fig. 47).

Fig. 44. The largest concentration of barrels seen at Ikkatteq, just 75m to the south of the collapsed hangar. At this location barrels are piled two to three layers deep (photo H. Harmsen 2018).

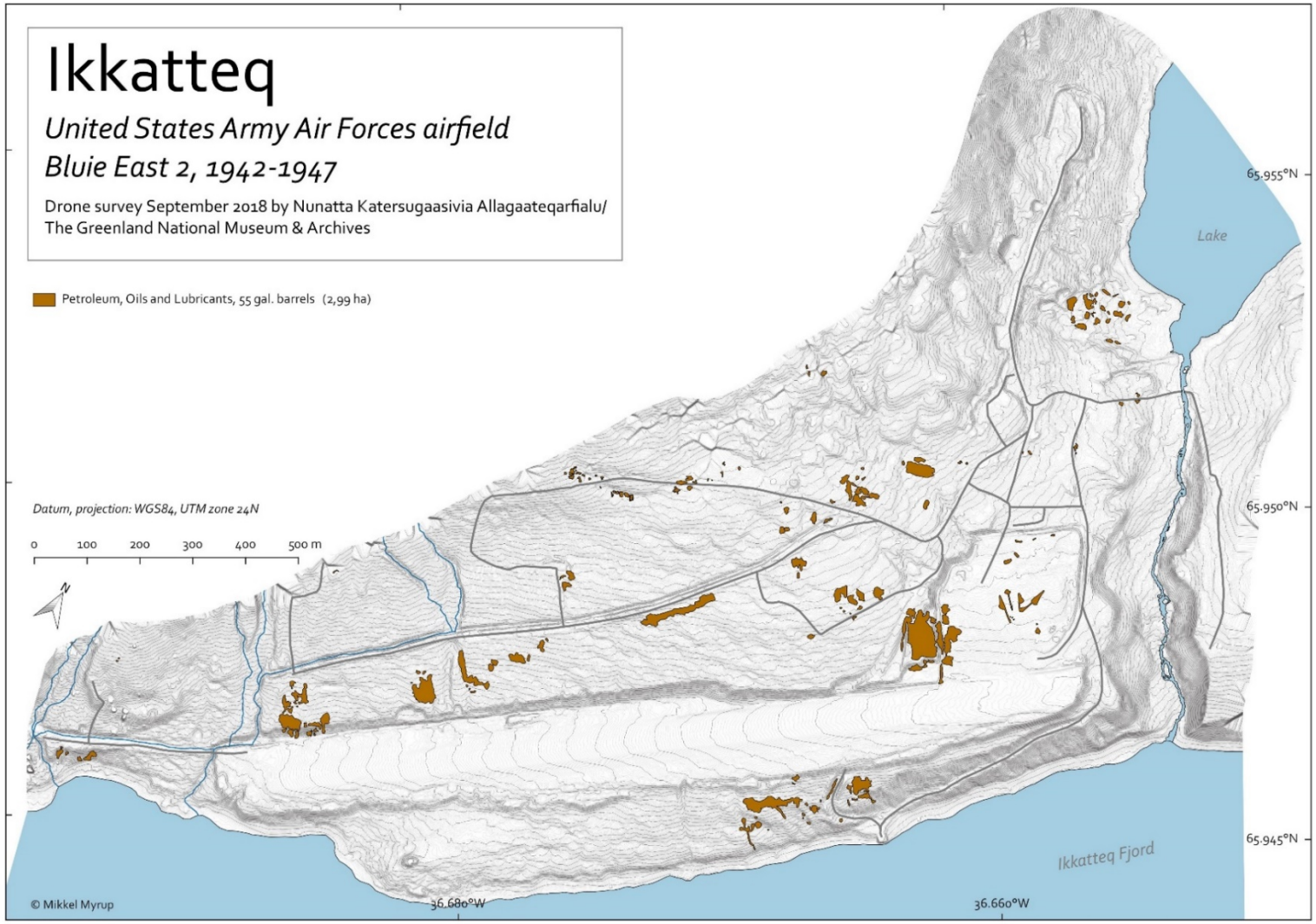

Fig. 45. Map showing major clusters of empty fuel barrels at BE-2 in September 2018. Barrels are observed to cover an approximate surface are of ~3 hectares. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

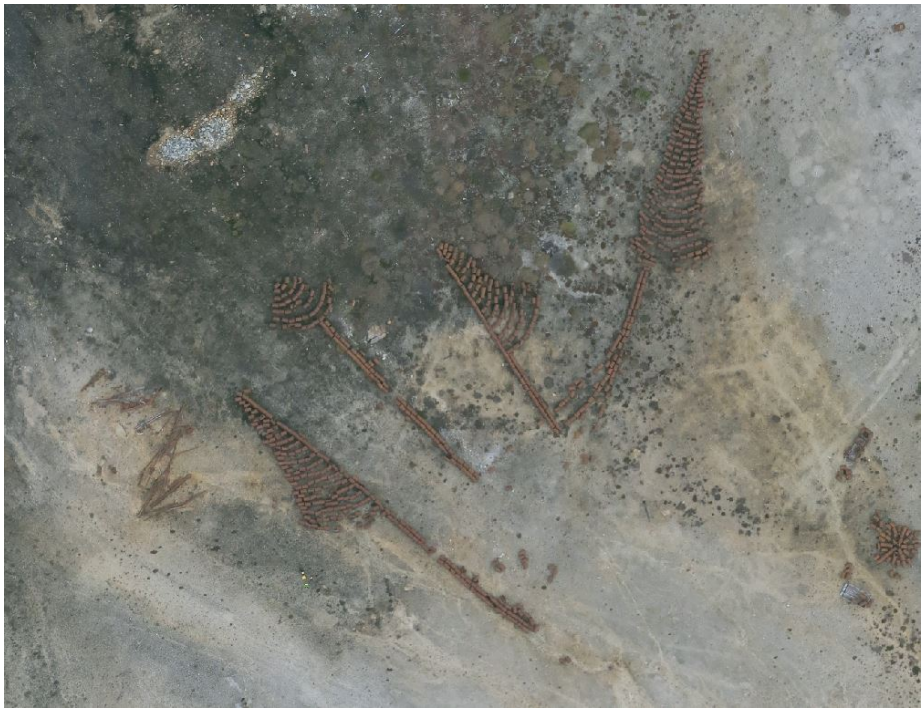

Fig. 46. Barrels arranged to form a design as seen from above (photo: M. Myrup 2018).

Fig. 47. Barrels arranged to form a flower pattern (photo: M. Myrup 2018).

World War II era artifacts

BE-2 was observed to be littered with small- to medium-sized artifacts dating to the World War II era. It is important to contextualize the significance of the American presence in East Greenland through the material culture that was left behind. East Greenlanders of the era had little previous experience with foreigners and it is not difficult to imagine the impression left on local people that visited the base and saw the vast material resources and technology that the American's brought with them to Greenland. After the base closed, most of the portable items and equipment at BE-2 were probably removed by local people in the years immediately following 1947. This pattern of collection and re-use was seen at other decommissioned bases in Greenland, such as Bluie West West One, Narsarsuaq in 1958 where vast quantities of building materials were used in the construction of local houses and farm buildings throughout South Greenland.

The vast majority of materials on the surface of BE-2 consisted of broken and degraded building materials and hardware that included materials like wood, tar paper, nails, scrap metal, pipes, asbestos tiles, electrical components, broken machine and vehicle parts and other types of non-biodegradable refuse (ie. metal cans, vulcanized rubber hoses and tires, plastics, glass bottles, insulation, etc.). Some diagnostic artifacts remain that are of historic interest and provide insight into the operations of the base and daily life of soldiers stationed there from 1943-1947.

Fig. 48 illustrates several different types of small- to medium-sized artifacts observed at BE-2 in September 2018. All the items appear to have be American production types of both commercial and military design and therefore diagnostically significant. It appears that soldier's stationed at the base were afforded basic amenities such as oil heat and electricity, a luxury that most Greenlanders at the time did not have access to. For example, several medium-sized oil heaters were observed in building footprints that were most likely barracks, private quarters and offices (Fig. 48, A). An electrical dishwasher was observed in an area believed to be the former mess hall. Of special interest was also the item shown in (Fig. 48, H), a T-slot duplex electrical socket and housing. The electrical grid at the base would have run at 110-120 Volts, the North American standard for supply voltage.

Figs. 49-52 show a few other artifacts observed on the surface at BE-2 of significant historic interest.

Stationary artifacts

BE-2 possesses several pieces of stationary machinery and equipment such as gravel crushers, furnaces and boilers (Figs. 53-55). Most of these items are made of steel and weigh several tons. In some cases, maker's marks were still visible, such as is seen om the boiler shown in Fig. 55. This industrial boiler can be traced to the FitzGibbons Boiler Company, Inc., Oswego, New York.

Fig. 48. (Following page) Selected images of World War II era artifacts identified at BE-2 in September 2018. (A) H. Lange inspecting an oil space heater, unknown model; (B) Broken Coca-cola bottle; (C) Front panel, space heater; (D) Engine bloc, unknown model; (E) Grease used for machine lubrication; (F) Electric dishwasher?; (G) Steel garbage can; (H) T-slot duplex electrical socket with housing; (I) Assorted tire rims; (J) OLD-TIME General S-O-S Fire Guard Model 85 Fire Extinguisher (photos: H. Lange and H. Harmsen 2018).


A.
B.
C.
D.
E.
F.
G.
H.
I.
J.

Fig. 49. Discarded hydraulic pump (photo: H. Lange 2018).

Fig. 50. Remains of a steel fixture, possibly part of a boiler or heating unit (photo: H. Lange 2018).

Fig. 51. Modified snow skis, possibly attached to a trailer pulled by the M-7 (photo: H. Lange 2018).

Fig. 52. Braided steel carpet, helpful for traction in slippery or boggy terrain (photo: H. Lange 2018).

Fig. 53. Heavy machinery used for production and loading gravel at BE-2 (photo: H. Lange 2018).

Fig. 54. Rock crusher used to produce gravel for the airstrip at BE-2 (photo: H. Lange 2018).

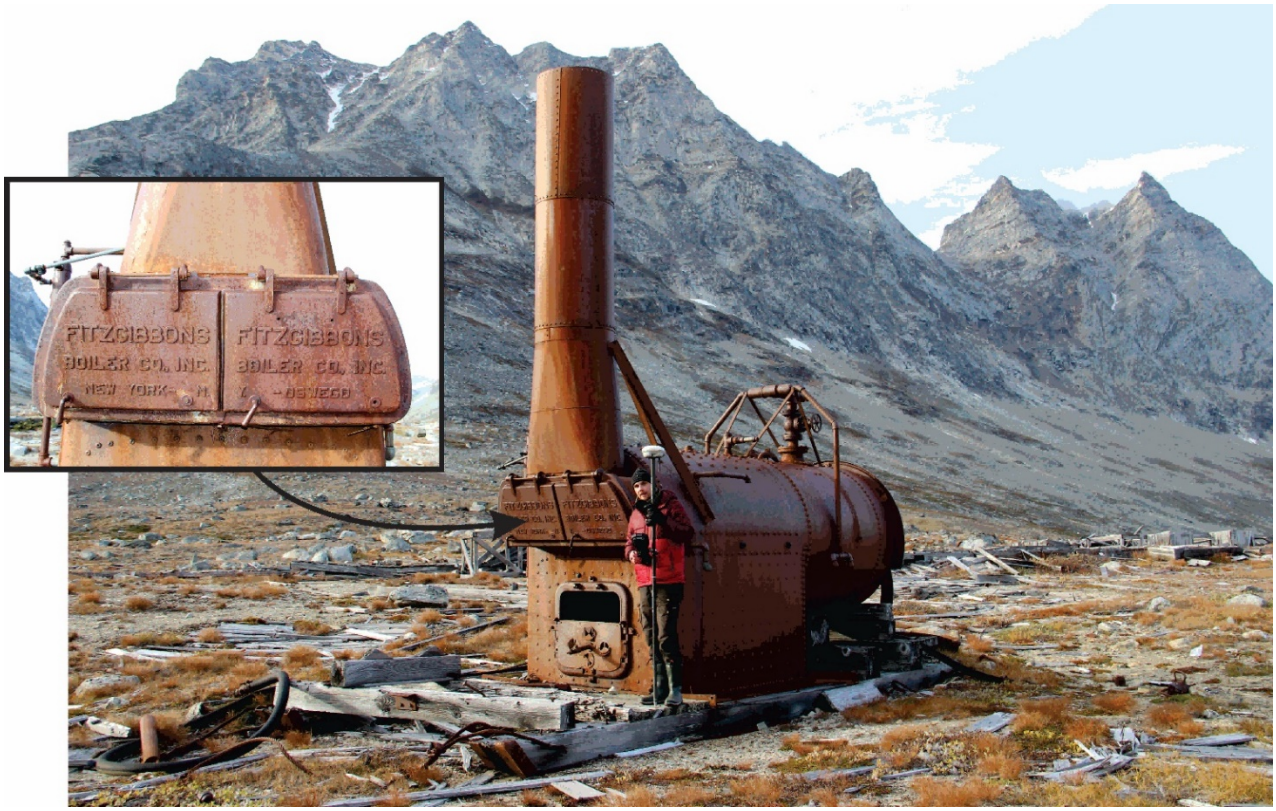

Fig. 55. A lonely boiler far from home. This industrial boiler was manufactured by the FitzGibbons Boiler Company, Inc., Oswego, New York. Harmsen shown collecting dGPS point (photo: H. Lange 2018).

RECOMMENDATIONS

From an archaeological and historic perspective, BE-2 represents an interesting case study of the American military's legacy in a remote fjord in East Greenland during the period of 1942-1947 (Fig. 56). In addition to tens of thousands of empty fuel barrels, the area is replete with World War II era vehicles and equipment, debris remains of buildings, cement foundations, earthwork anti-aircraft defenses and a vast quantity of infrastructure materials and diagnostic surface artifacts. Although there is a considerable amount of material still present at BE-2, it was evident that salvage and collection has taken place at the site repeatedly over the past 70 years by both local Greenlanders and foreign visitors. People are drawn to this place both out of a morbid curiosity and because the area represents a tangible example of Greenland's role in the Second World War.

Although opinions differ as to the aesthetic value of the remains at BE-2, the base and its components comprise a cultural landscape that is inscribed with the activities of a military garrison during a time of conflict. Much of the heavy and stationary objects (vehicles, construction equipment, boilers, furnaces, generators, etc.) pose no immediate threat to the environment and should be considered as 'historic monuments' due to their diagnostic attributes and interesting characters. What currently remains at BE-2 represents an important chapter of Allied operations in the North Atlantic and Greenland during the Second World War. BE-2 impacted

the lives of an entire generation of Greenlanders and informs an important part of modern Greenlandic history as well as the modern geo-political relationships between Greenland, Denmark and the United States.

Therefore, based on the survey performed between 23-25 September 2018, the NKA hereby makes the following recommendations to the Steering Committee:

- All vehicles and heavy equipment (trucks, trucks, cranes, tractors, etc.) should remain at BE-2. The vehicles and heavy equipment are inert 'monuments' and possess historic value in the landscape. Present and future generations will benefit from being able to visit and observe these derelict pieces of machinery in their current setting.
- All heavy and stationary man-made objects (e.g. boilers, furnaces, generators, concrete foundations, etc.) at BE-2 should remain undisturbed. These types of large objects pose no current threat to the environment and possess significant historic value by virtue of their diagnostic character. Present and future generations will benefit from being able to visit and observe these objects in their original setting.
- All earthwork anti-aircraft defense fortifications at BE-2 should remain undisturbed. These features are of significant historic and architectural value and pose no current threat to the environment. Present and future.

Although beyond the scope of this current report, observations made by the field team confirm anecdotal reports of the environmental dangers present at BE-2; the area is highly contaminated with vast amounts of lead and asbestos, as well as other potentially hazardous substances. Additionally, anecdotal reports (see Appendix I) state that the site may possess a cache of unexploded ordnance (i.e. dynamite). We therefore are compelled to make the following additional recommendations:

- **Environmental risks:** As mentioned above, BE-2 may be heavily contaminated and pose significant risk to human health and well-being. We can definitely confirm the presence of a large concentration of asbestos tiles in the northwestern area of the main camp (Fig. 56) and **advise reasonable protective measures should be taken when entering this area.**
- **Unexploded ordinance**: On the eastern frontier of BE-2 lies the remains of a collapsed barbwire enclosure on the bluff overlooking the fjord. Within this area a conspicuous mound of earth (Fig. 56) was identified that may be related to Bob Baxter's anecdotal story of 700 cases of unexploded dynamite that were left behind after BE-2 was closed in 1947 (see Appendix I). If this is the case, **we advise extreme caution be taken in this area** as aging nitroglycerine--even when buried--can be extremely volatile and pose significant danger if disturbed.

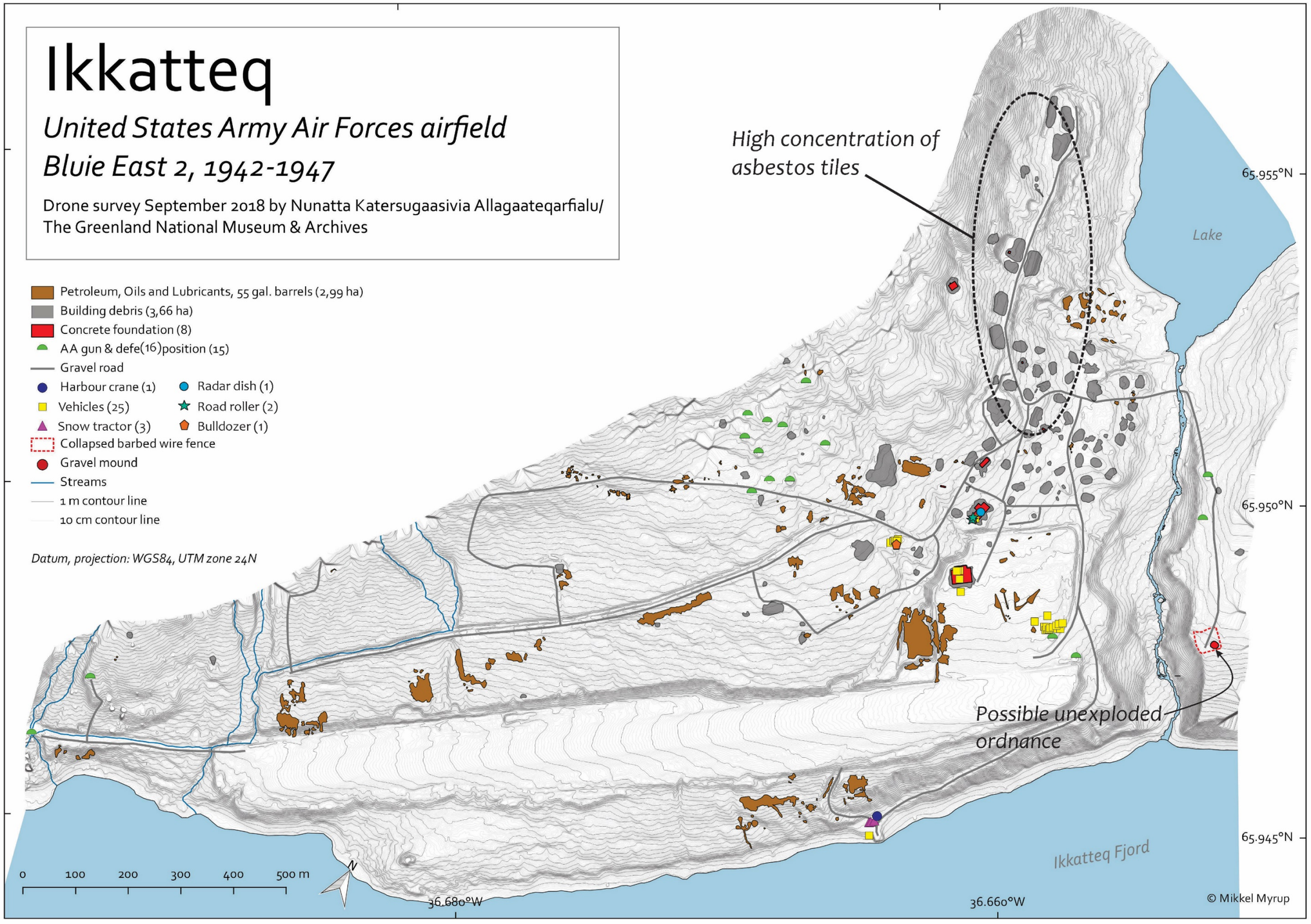

Fig. 56. Map detailing all features and large artifacts observed at BE-2 in September 2018. Map courtesy of M. Myrup, Greenland National Museum and Archives 2018.

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Fig. 57. Bob Baxter (left) posing in front of the explosive depot at BE-2 ca. 1944-1947.

APPENDIX I: MEMORIES OF BLUIE EAST 2 (IKATEQ, GREENLAND) by Bob Baxter, Bisbee AZ, July 2000.

Source: http://www.creativehwy.net/jcstott/baxter/baxter.html

Horace Greeley didn't say it first but, "go West, young man," was prophetic advise (sic). Certainly, he didn't know about Bluie East 2 (BE-2) but I realized the wisdom of counsel attributed to him upon viewing Ikateq, Greenland, in April 1946. A drab cluster of wooden buildings, close by a 4,000 ft gravel landing strip bordering a narrow fjord surrounded by mountains was the destination of my flight to seemingly nowhere. "How," I mused, "does the Army Airways Communications System garner such bleak outposts?" The answer evolved slowly during the next twelve months, hundreds of miles distant from luckier AACS-men at major Bluie airfields.

Shortly after arriving to perform radio operator duties I was appointed custodian of cryptographic items at our remote corner of Earth. Fair enough, but the necessity for an automatic pistol and submachine gun to safeguard classified material escapes me to this day. Somewhere under the snow, or in a dump, archeologists will find mute testimony that hundreds of beer can and dozens of 55-gal fuel drums were kept from purloining military secrets.

An interesting collection of artifacts indicated Ikateq was once thought to be important in the scheme of Arctic warfare. New trucks and trailers were stored in a hangar alongside 90-mm anti-aircraft cannons and a Nordyn

Norseman bush plane. There was enough ordnance for the twenty, or so, men on station to make a stand at a cold place in a Cold War. A rickety structure with a DANGER-EXPLOSIVES-KEEP OUT sign contained approximately 800 cases of unstable dynamite that led to an interesting event (Fig. 56).

Upon seeing the dynamite cases leaking nitroglycerin an Army expert sent in to eliminate the hazard declared his task to be too dangerous and departed. Our CO (a former oil field worker) and the NCOIC of Engineers (a former coal miner), believed their knowledge was on par with the dicey job. Furthermore, July 4, 1946, being just around the corner, could be celebrated with a massive firecracker. One hundred cases were moved away from camp and detonated on Independence Day. The fearsome blast rattled everything and everyone at BE-2, some believed it might have shaken AACS Headquarters at BW-1. Apparently not, the 700 remaining cases were still in storage when I left in 1947. I don't remember why our "explosives experts" didn't finish the job.

Our primary assignment was to provide communications services around-the-clock for Air Weather Service observers. Additionally, a 3.000 watt non-directional radio beacon was kept on-line to assist aircraft transiting Sondrestrom (BW-8), or needing an alternate landing place in otherwise inhospitable territory. Before my time the 90-ft beacon tower was twice destroyed by avalanches. I don't have equipment photos but BE-2 emulated BW-3 if you do not include the radio range and direction finders shown on site pages.

An aircraft from BW-1 was scheduled monthly to deliver mail and items depleted from supplies brought annually by Coast Guard Cutters such as EASTWIND. Bad weather prevented delivering Christmas mail in 1946. A faulty mid-January air drop from about 100 ft caused precious gifts to be scattered and destroyed in the runway area. Disappointment and outrage engendered belligerent thoughts centered on the 90 mm guns in storage.

I found radio operator duties considerably alleviated isolation because dusk-to-dawn propagation (skip) enabled hearing many North Atlantic stations where others also maintained lonely vigils. We weren't above breaking network discipline rules to frequently exchange bits of news and nonsense. In turn, a security monitoring station at Presque Isle, ME cited violations monthly but without direction finding there was no way to identify me and naughty (Tsk! Tsk!) transgressors at Crystal 1 and 2, Keflavik, BW-1 and BW-8.

Present-day tourist activities throughout Greenland were preceded by upscale outdoor recreation at Bluie East 2. Ingenious, bored GI's built the first ski tow in that desolate land. Discarded Jeep parts - engine, drive and wheels - were jury-rigged at the foot of Brenner's Peak to tug ardent sportsmen up a steep slope. When the tow became unusable "skijorring" on the runway behind anything that would pull us came to be. In summer salmon (Arctic Char?) traveled from the fjord to a glacial lake northwest of the base. Fed up with a diet of corned beef hash and without fishing gear we collected 12 to 20 tasty fish at a time upon throwing a concussion grenade into the feeder stream.

Here ends my story about BE-2. For reasons not fully comprehended my wish is to spend a day just wandering around the base area. Might I yearn for crisp, cool air unlike present desert surroundings?