ANDERSEN AIR FORCE BASE, NORTH FIELD **HAER No. GU-9**
Pati Point
Yigo
Guam County
Guam

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

PHOTOGRAPHS

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
333 Bush Street
San Francisco, CA 94104

HISTORIC AMERICAN ENGINEERING RECORD

ANDERSEN AIR FORCE BASE, NORTH FIELD

HAER No. GU-9

Location: North Field is located on the northern end of Guam near Pati Point on present-day Andersen Air Force Base (Andersen AFB) at latitude 13.58.58364, longitude 144.91395. The coordinate represents the northwest corner of the airfield. The coordinate was obtained on 9 December 2011 by plotting its location on the 1:24000 Pati Point, GU USGS topographic quadrangle map. The accuracy of the coordinate is +/-12 meters. The coordinate's datum is North American Datum 1983. North Field Runway's location is restricted pending concurrence of the owner to release its location to the public. Andersen AFB is located near the town of Yigo, Guam.

Present Owner: United States Air Force

Present Use: Runway

Significance: North Field (Site 66-07-1064) is significant for its association with Andersen AFB's role as an important strategic and logistical location for the Air Force during the Cold War. North Field was originally constructed to serve as an airfield for B-29 bombers as part of the strategic bombing campaign over Japan during World War II. After the war, the U.S. Air Force took control of the base and used it first as a bomber base for the Far East Air Force (FEAF) and then as the only Strategic Air Command (SAC) bomber base in the Pacific Rim. During the Vietnam Conflict, Andersen's runways supported major B-52 bomber operations against North Vietnam, including Operations ARC LIGHT, BULLET SHOT, and LINEBACKER I and II, a crucial portion of the American strategy during the war.

Historians: Edward Salo, Ph.D., and Geoffrey Mohlman, M.A., Southeastern Archaeological Research, Inc. (SEARCH), February 2012

Project Information: The Historic American Engineering Record team for this project included Geoffrey Mohlman, M.A., Edward Salo, Ph.D., and Travis Fulk, M.A., all of whom work for SEARCH. Mohlman and Salo served as the historians for the project, while Mohlman and Fulk served as the photographers. Measured drawings were collected from Civil Engineering at Andersen AFB. The reduced copy of the Strategic Air Command, Andersen Air Force Base, Guam, M.I. "1979 Pavement Condition Survey, Construction History" that is included on page 42 is on file at Civil Engineering at Andersen AFB, Guam. The work was done as mitigation of adverse effects to North Field Runway (Site 66-07-1064) associated with MILCON Projects P-100 (North Ramp Utilities) and P-101 (North Ramp Parking). The mitigation work was done in accordance with the *Programmatic Agreement Among the Department of Defense, the Advisory Council on Historic Preservation, the Guam State Historic Preservation Officer, and the Commonwealth of the Northern Mariana Islands State Historic Preservation Officer Regarding the Military Relocation to the Islands of Guam and Tinian* and in accordance with Contract N62742-09-D-1960, Task Order Number 0013, issued by Naval Facilities Engineering Command, Pacific, to SEARCH.

Part I. Historical Information

A. Physical History

1. Date(s) of construction: 1944-45[1]

2. Architect/Engineer: Original runway designed by 854th Engineer Aviation Battalion, U.S. Army. Runway was extended in 1954-57 by the 809th Engineer Battalion (Heavy Construction).

3. Builder/Contractor/Supplier: The runway was originally constructed by the 854th Engineer Aviation Battalion.

4. Original plans and construction: The U.S. Army designed North Field with two parallel runways (present-day Runways 06R/24L and 06L/24R) with each runway measuring 10,500' x 500'. The runways were paved with asphaltic concrete with a coral limestone base, and the paved area of each runway was 8,500' x 200' with 1,000' overruns at both

[1] "A Brief History of Anderson AFB (1945-1985). On File, Base Historian, Andersen, AFB, Guam; Herbert E. Brown Jr., "Aviation Engineers on Guam." *The Military Engineer*, XXXVII (October) (1945):399.

ends of each runway.[2] The northern runway was labeled "North Runway" (present-day Runway 06L/24R) (Photographs GU-9-1 and GU-9-13), and the southern runway was labeled "South Runway" (present-day Runway 06R/24L) (Photographs GU-9-15 and GU-9-21). A center taxiway divided the two runways (present-day Taxiway C) (Photographs GU-9-14 and GU-9-24), and a southern taxiway (present-day Taxiway B) paralleled the South Runway to the south (Photograph GU-9-16 and GU-9-17). A northern taxiway (present-day Taxiway D) paralleled the North Runway to the north. Eastern (present-day Taxiway J) and western (present-day Taxiway F) crossover taxiways were constructed on the ends of the runways, connecting to the north, center, and south taxiways. Taxiway loops were constructed on the northwest (present-day Taxiway D) (Photograph GU-9-2) and southwest (present-day Taxiway A) (Photographs GU-9-20 and GU-9-23) corners of the northern and southern taxiways, providing additional hardstands for aircraft parking. Three additional crossover taxiways cut the two parallel runways perpendicularly (only present-day Taxiways H and G exist of these three crossovers), connecting the North Taxiway to the South Taxiway (Photographs GU-9-18 and GU-9-19). Along with taxiways, loops, and crossovers, the airfield had two service aprons that measured 2,000' x 300' (Photographs GU-9-5, GU-9-7, GU-9-8, GU-9-10, GU-9-11, and GU-9-19) and four sub-service aprons that measured 800' x 400'.[3]

The center, northern, and southern taxiways had associated round-headed hardstands paved with asphaltic concrete measuring 120' in diameter with 10' shoulders. When originally designed, the hardstands were staggered in depth with some measuring 340' and others measuring 185', from center of taxiway to center of hardstand, so that parked planes did not lie in a straight line. While this staggered approach was done along the South Taxiway and the majority of the Center Taxiway, those along the South Taxiway Loop were built of uniform depth. The alternating length of hardstand was to protect the planes from possible Japanese aerial attack while the uniform depth approach was done to speed up construction once the threat of Japanese air attack had been eliminated. Six of the hardstands along the Center Taxiway had uniform depths

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[2] Brown, "Aviation Engineers on Guam," 399, stated that the paved runways were 200' wide, but As-Built plans from 1956 show the North Runway as 180' wide (Strategic Air Command, "Airfield Improvement General Key Plan Layout of Overrun, Center T/W, Hardstand & Road for 4000' Cross-over," As-Built [1956]. On File, Civil Engineering, Andersen AFB, Guam). This 180' width for the North Runway is confirmed by a 1979 pavement condition survey (Strategic Air Command, Andersen Air Force Base, Guam, M.I. "1979 Pavement Condition Survey, Construction History," Drawing No. PRO 153 [1980]. On File, Civil Engineering, Andersen AFB, Guam).

[3] "A Brief History of Anderson AFB (1945-1985). On File, Base Historian, Andersen, AFB, Guam; Brown, "Aviation Engineers on Guam," 399. The number and measurements of the aprons reported in Brown is different from that stated in Ann Yoklavich and H. David Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam* (Honolulu: Mason Architects, 2004), 14-15. Yoklavich and Tuggle report that North Field had four parking aprons that measured 250' from the centerline of the taxiway, not the two service aprons 300' x 2,000' and four sub-service aprons 400' x 800' mentioned by Brown. As Yoklavich and Tuggle note, the exact layout of North Field during World War II has not been determined since few plans or aerial photographs from 1945 have been located.

while the remaining hardstands had alternating depths, and all of the hardstands along the North Taxiway and North Taxiway Loop were built uniformly instead of alternating. By November 1945, a map of the airfield shows 130 hardstands.[4]

Construction began on North Field in November 1944, with the first runway completed by early February 1945. The second runway was completed by May 1945, while hardstands, the north and south service aprons, and taxiways, including the center taxiway, were only partially constructed at that time. By July 1945, the center taxiway was complete along with the southern taxiway and southern taxiway loop, but many of the hardstands and service aprons were still partially constructed. The airfield was not finished by the end of the war in August 1945, and construction continued, albeit at a slower pace. In November 1945, the service aprons had been completed, but hardstands were still under development along the center taxiway and in the northern area of the airfield, along with the northern taxiway loop. While apparently planned, the eastern end of the northern taxiway was supposed to have been built to connect to the eastern taxiway, but subsequent plans of the runway system never show this portion having been built.[5]

5. Alterations and additions: Little construction activity appears to have happened once the runways were completed in late 1945 or 1946, until the early 1950s. However, technological advancements and geopolitical actions of the Cold War and the Vietnam War required alterations to the airfield. With the advent of larger and heavier aircraft after World War II, and with the introduction of jet bombers, the runways had to be lengthened and hardstands enlarged. Many of the alterations and additions occurred between the early 1950s and the mid-1960s. Some changes occurred within a year or two while other changes took more than a decade to complete. From the late 1960s to the 1990s, most of the construction activity on the runway was limited to maintenance and repair. The following discussion of alterations and additions is organized chronologically. For a discussion of Andersen AFB's role (by 7 October 1949, North Field, along with the larger base where North Field was located, became known as Andersen Air Force Base) in the Cold War and Vietnam, see the historic context below.[6]

1952-53. The U.S. Air Force began altering the round-headed hardstands, replacing six with two larger parking aprons (portion of present-day South Ramp 2 and all of South

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[4] Brown, "Aviation Engineers on Guam," 399; Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 14; "North Field, Guam, 314th Wing" map, *Impact Magazine*, November 1945.

[5] Brown, "Aviation Engineers on Guam," 399; Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 14; "North Field, Guam, 314th Wing" map, *Impact Magazine*, November 1945.

[6] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 16.

Ramp 3) along the South Taxiway and South Taxiway Loop (Photograph GU-9-20).[7] The U.S. Air Force also began constructing its magazine area in 1952/1953 just to the north of the airfield, north of present-day East Perimeter Road (Photograph GU-9-12).

1954-56. The U.S. Air Force replaced six more round-headed hardstands with two larger parking aprons (remaining portion of present-day South Ramp 2) along the South Taxiway Loop (Photograph GU-9-20).[8]

1955-57. The 809th Engineer Battalion (Heavy Construction) extended the South Runway by 2,000' along with the South Taxiway (Photographs GU-9-15 and GU-9-16). The North Runway received paved overruns on the east (Photograph GU-9-1) and west ends, and most of the hardstands along the Center Taxiway were repaved. In addition, three new parking aprons (present-day North Ramps 1, 2, and 3) made of 2"-thick asphaltic concrete over a 6"-thick base course were constructed, the taxiways were widened to 100', and 2" "lifts" of asphaltic concrete were added over most of the taxiways and the South Runway. Prior to when the 2" overlay of asphaltic concrete was added, the pavement was proof-rolled twelve or more times over any one area by a 100-ton roller. Those areas that failed during proof-rolling were dug to a minimum depth of 36" and filled with coral and compacted to 90-95 percent with the top 8" compacted to 100 percent. The South Runway extension had a portion of it constructed of polymer cement concrete (PCC).[9]

1958. North Runway was repaired similarly to South Runway (Photographs GU-9-1 and GU-9-13).[10]

1959. Most of the round-headed hardstands on the interior of the South Taxiway Loop (Photograph GU-9-20) were replaced with large rectangular parking aprons made of 12" of concrete (present-day South Ramp 1), and two rectangular parking aprons were

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[7] Department of the Air Force, Far East Forces, Office of the Director of Installations, "Andersen Air Force Base, Guam, M.I., Air Field Improvements Key Map and Drawing Index," As-Built [1953]. On File, Civil Engineering, Andersen AFB, Guam.

[8] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*,16; Strategic Air Command, "Airfield Improvement General Key Plan Layout of Overrun, Center T/W, Hardstand & Road for 4000' Cross-over," As-Built [1956]. On File, Civil Engineering, Andersen AFB, Guam.

[9] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*,16; Richard J. Tallon, "Guam Concrete Runway Paving," *Military Engineer*, January-February 1957:15-16 noted that the South Runway was extended 1,000', but As-Built plans from 1956 show the extension as 2,000' (Strategic Air Command, "Airfield Improvement General Key Plan Layout of Overrun, Center T/W, Hardstand & Road for 4000' Cross-over," As-Built [1956]. On File, Civil Engineering, Andersen AFB, Guam).

[10] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 16.

added to the south side of the South Taxiway Extension (present-day South Ramps 6 and 7) (Photographs GU-9-16 and GU-9-18).[11]

1961-73. Many of the runway's round-headed hardstands were enlarged, typically by converting them to slightly larger rectangles, or to square bodies with round heads. A drawing from 1961 shows the majority of the round-headed hardstands in place, with the exception of those replaced by parking aprons. By 1966, twenty round-headed hardstands had been converted to rectangles or square bodies with round heads, with eight along the north taxiway (present-day Taxiway D), eight along the Center Taxiway (present-day Taxiway C), and four along the South Taxiway (present-day Taxiway B) (Photograph GU-9-19 shows a round-headed hardstand, a hardstand with a square body and round head, and a rectangular hardstand).[12]

1966. Because of increased air sorties during the Vietnam War, the North Runway was leveled, widened, and extended (Photograph GU-9-13), the Center Taxiway (present-day Taxiway C) was also extended (Photograph GU-9-14), a taxiway was constructed on the west end to connect the two overruns (present-day Taxiway E) (Photograph GU-9-22), and a new East Taxiway (present-day Taxiway K) was built to connect the two runways. The North Runway extension was built entirely with 5" of asphaltic concrete over an 8" base course.[13] Facility 02600 (present-day USDA Warehouse) was constructed on the north side of the airfield, on the southwest corner of present-day 32nd and 34th Streets (Photograph GU-9-6).

1966-1967. The Air Force constructed 40 steel revetments around hardstands to protect aircraft from a threat of fire from an accident. These steel revetments are nonextant.[14]

1969. By 1969, a 900' x 40' section of the North Runway extension's wearing course was removed and replaced (Photograph GU-9-13).[15]

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[11] Headquarters, 130th Engineer Aviation Brigade, Det. #1, "Apron Parking Construction, Andersen AFB Vicinity Map," As-Built, Drawing No. 130-AND-P11-55 [1959]. On File, Civil Engineering, Andersen AFB, Guam.

[12] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 16; Strategic Air Force Command, "Airfield Pavement Plan, Evaluation and Description," Drawing Number AND-PRU-14 [1961]. On File, Civil Engineering, Andersen AFB, Guam; Department of the Navy, Bureau of Yards & Docks, "U.S. Air Force, Andersen Air Force Base, Taxiway Widening & Additional Hardstands," Y & D Drawing No. 1,051,519 [1966]. On File, Civil Engineering, Andersen AFB, Guam.

[13] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 16; Department of the Navy, Bureau of Yards & Docks, "U.S. Air Force, Andersen Air Force Base, North Runway & Taxiway Extensions," Y & D Drawing No 1,051,786 [1966]. On File, Civil Engineering, Andersen AFB, Guam.

[14] Charles J. Williams Jr., "Airfield Revetments on Guam," *The Military Engineer*, November-December 1967, 438.

[15] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 16; Strategic Air Command, Andersen Air Force Base, Guam, M.I. "1979

1973. A 2" lift of asphaltic concrete measuring 8,200' x 30' was removed and repaved with new asphaltic concrete on the North Runway (Photographs GU-9-1 and GU-9-13).[16]

1974. A leveling course averaging 1½" and a 1½" top course of asphaltic concrete were added to the original part of the South Runway (Photographs GU-9-15 and GU-9-21). Additionally, three 250' x 30' sections of the Overrun Access Taxiway (present-day Taxiway E) were reconstructed of 14" PCC on a 10" coral base (Photograph GU-9-22). The remaining asphaltic concrete sections of the Overrun Access Taxiway (present-day Taxiway E) between the runways were overlaid with 2" asphaltic concrete. Similarly, due to base failures, five locations measuring 2,000' x a variable width of 17' to 40' were repaired with 5" of asphaltic concrete set on a 10" coral base along the Center Taxiway (present-day Taxiway C) (Photographs GU-9-14 and GU-9-24).[17]

1975. The Air Force contracted with Hawaiian Rock Products to do an overlay on the original portion of the North Runway (Photographs GU-9-1 and GU-9-13). The 1974 top course to the South Runway appears to have failed, and a 2" overlay of concrete asphalt was applied (Photographs GU-9-15 and GU-9-21).[18]

1981. The construction of Facility 18017 (Hangar 2) closed off most of South Ramp No. 4 (Photograph GU-9-18). Due to this facility, the Air Force no longer classifies the apron as part of the airfield.[19]

1980-2004. Many of the square-body hardstands with round heads along the Center Taxiway were enlarged to rectangular hardstands, sans round heads (Photograph GU-9-19).[20]

Pavement Condition Survey, Construction History," Drawing No. PRO 153 [1980]. On File, Civil Engineering, Andersen AFB, Guam.

[16] Strategic Air Command, Andersen Air Force Base, Guam, M.I. "1979 Pavement Condition Survey, Construction History," Drawing No. PRO 153 [1980]. On File, Civil Engineering, Andersen AFB, Guam.

[17] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*,16; Strategic Air Command, Andersen Air Force Base, Guam, M.I. "1979 Pavement Condition Survey, Construction History," Drawing No. PRO 153 [1980]. On File, Civil Engineering, Andersen AFB, Guam.

[18] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 16-17; Strategic Air Command, Andersen Air Force Base, Guam, M.I. "1979 Pavement Condition Survey, Construction History," Drawing No. PRO 153 [1980]. On File, Civil Engineering, Andersen AFB, Guam.

[19] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 17.

[20] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 17.

1997. Facilities 02548 (Storage), 02555 (Aircraft Wash Rack/Pad), 02557 (Hazardous Storage), 02641 (HC-5 Maintenance Hangar), 02647 (Electrical Power Station Building), and 02649 (Gym/Navy Snack Bar) were constructed on the north side of North Ramp 1 (Photographs GU-9-3, GU-9-4, and GU-9-9).

2005-06. Facility 17016 (Hangar 1) was constructed, eliminating two round-headed hardstands on the south side of the South Taxiway, just west of the South Taxiway Loop (Photograph GU-9-20).

2005-07. The Air Force contracted with AmOrient Contracting Inc. to provide management oversight for the removal of all asphaltic concrete on North Runway. While reusing the majority of the existing base material, the sub-base was graded to provide a uniform surface. A completely new surface of Portland cement concrete was applied, with the finished runway measuring 10,555' x 200'. In addition to the new surface, new centerline lighting, edge lighting, and navigation lights were placed along the North Runway.[21]

2008-10. Similar to the repaving of North Runway, the 11,185' x 200' South Runway was stripped of all of its asphaltic concrete and replaced with Portland cement concrete with a compressive strength of 5,000 pounds per square inch. Along with the new surface, the concrete was grooved to improve rain runoff, improve traction, and reduce skidding due to water or rubber buildup. Additionally, the arresting cables (BAK-12) at each end of the runway were removed, refurbished, and reinstalled. Like the North Runway, new runway and approach lights were installed along the South Runway. The contractors for the work were Perini Corporation and Black Construction Corporation.[22]

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[21] "North Runway Repair – Andersen Air Force Base, Guam," electronic document, http://www.amorient.com/index.php?option=com_content&view=article&id=57:north-runway-repair-andersen-air-force-base-guam&catid=38:portfolio&Itemid=64, accessed December 7, 2011; "Andersen runway reopens" June 18, 2007, electronic document, http://www.pacaf.af.mil/news/story.asp?id=123057556, accessed December 7, 2011

[22] "South runway reopened, ready for operations," May 18, 2010, electronic document, http://www.andersen.af.mil/news/story.asp?id=123205060, accessed December 7, 2011; "Runway completion brings operations changes, improvements," April 13, 2010, electronic document, http://www.andersen.af.mil/news/story.asp?id=123199637, accessed December 7, 2011; "Perini Wins $50 Million Award at Andersen Air Force Base, Guam," October 14, 2008, electronic document, http://www.reuters.com/article/2008/10/14/idUS137505+14-Oct-2008+BW20081014, accessed December 7, 2011.

B. Historical Context

Introduction

The establishment of present-day Andersen AFB resulted from construction of two U.S. Army Air Forces airfields—North Field and Northwest Field, built in 1944 and 1945 following the liberation of Guam from Japan. North Field was constructed by U.S. Army engineers during the last years of the war to support U.S. Army Air Force (AAF) B-29 Superfortress strategic bombing missions against Imperial Japan. After the war, the newly created U.S. Air Force (USAF) took control of the base and used it first as a bomber base for the Far East Air Force (FEAF) and then as the only Strategic Air Command (SAC) bomber base in the Pacific Rim. During the Vietnam Conflict, Andersen's runways supported major B-52 bomber operations against North Vietnam, a crucial portion of the American strategy during the war. Table 1 provides the major units at Andersen AFB from 1945 (the creation of the base) to 1989 (the end of the Cold War).

Table 1. Units at Andersen AFB, 1945 to 1994.[23]

Unit	Dates of Deployment
314th Bombardment Wing	January 16, 1945 – May 15, 1946
19th Bombardment Group	January 16, 1945 – June 1, 1953
29th Bombardment Group	January 17, 1945 – May 20, 1946
39th Bombardment Group	February 18 – November 17, 1945
330th Bombardment Group	February 18 – November 17, 1945
19th Air Refueling Group	December 20, 1947 – August 17, 1948
North Guam Air Force Base Command (Provisional)	May 15, 1946 – August 24, 1948
19th Bombardment Wing	August 10, 1948 – June 1, 1953
54th Strategic Reconnaissance Squadron	February 21, 1951 – March 18, 1960
6319th Air Base Wing	June 1, 1953 – April 1, 1955
3d Air Division	June 18, 1954 – April 1, 1970
92d Bombardment Wing	October 16, 1954 – January 12, 1955
509th Bombardment Wing	July 10 – October 8, 1954
6th Bombardment Wing	January 14 – April 12, 1955
3960th Air Base Wing	April 1, 1955 – April 1, 1970
5th Bombardment Wing	January 14 – April 12, 1955
99th Bombardment Wing	January 29 – April 25, 1956
303d Bombardment Wing	July 12 – October 4, 1956
41st Fighter-Interceptor Squadron	August 5, 1956 – March 8, 1960
320th Bombardment Wing	October 5, 1956 – January 11, 1957
327th Air Division	July 1, 1957 – March 8, 1960
4133d Bombardment Wing (Provisional)	February 1, 1966 – July 1, 1970
43d Strategic (later Bombardment) Wing	April 1, 1970 – September 30, 1990
633d Air Base Wing	October 1, 1989 – October 1, 1994

[23] Harry R. Fletcher, *Air Force Bases: Air Bases Outside the United States of America, Vol. II* (Washington, D.C.: Office of Air Force History, United States Air Force, 1993), 3-5.

Pre-World War II Airfields at Guam

The use of Guam as a military outpost in the Pacific began soon after the United States acquired the island after the Spanish American War. In 1900, the U.S. Navy established the first American military base in Guam, followed the next year by the construction of a Marine Corps barracks. By 1921, the Marines had expanded their presence with the activation of the first aviation unit on the island, when a seaplane base was constructed. This was the first U.S. Marine Corps aviation unit in the Pacific. Although there was a military presence in the area, U.S. war planners realized that Guam would probably fall to a future Japanese invasion if war occurred. Because of the requirements established by Washington Naval Treaty of 1922 and military budget cuts, the U.S. abandoned the Marine seaplane base in 1931.[24] During the 1930s, the Navy planned to build two airfields on the island, but they were never constructed. However, Pan American Airways did establish a civilian seaplane station at Sumay as part of the San Francisco-Manila-Hong Kong route.[25]

By 1939, some American political and military leaders were advocating defense buildup in the Pacific, including new construction on Guam, to counter the growing Imperial Japanese sphere of influence. A 1939 report by Rear Admiral Arthur J. Hepburn advocated placing "a standing force of U.S. planes, submarines and perhaps capital ships where they would be within practical fighting distance of 1) the Carolines, 2) the Philippines, 3) Japan."[26] This plan was met with opposition from isolationist members of Congress as well as the Japanese government, which stated the report advocated "Nothing but [the creation of] advanced bases for long distance attack upon Japan."[27] President Franklin D. Roosevelt believed he could use the threat of fortifying Guam to bring the Japanese into diplomatic negotiations as similar threats had been used during the Washington Treaty talks.[28]

However, the Japanese did not establish new diplomatic talks because of the threats in the Pacific. In February and March 1941, the U.S. Congress appropriated $4.7 million for the construction of an airfield on Orote Peninsula, Guam. The U.S. Navy indicated that it could construct a 4,500' x 400' runway on Guam.[29] After the Japanese invasion of Guam on December 10, 1941, the Japanese quickly constructed a 4,500' coral-surfaced airstrip on the

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[24] Robert F. Rogers, *Destiny's Landfall: A History of Guam* (Honolulu: University of Hawaii Press, 1995), 151; Gordon L. Rottman, *World War II Pacific Island Guide: A Geo-Military Study* (Westport, CT: Greenwood Press, 2002), 388. For a discussion of the Washington Naval Treaty and its effects on the Pacific, see Erik Goldstein and John H. Maurer, *The Washington Conference, 1921-22: Naval Rivalry, East Asian Stability and the Road to Pearl Harbor* (Millford, Essex, UK: Frank Cass, 1994).

[25] "Trans Pacific Airlines to Touch at Islands," *Popular Mechanics*, April 1935, 485; Rottman, *World War II Pacific Island Guide: A Geo-Military Study,* 388.

[26] "ARMY & NAVY: Wart on the Pacific," *Time Magazine*, January 30, 1939. Electronic resource, http://www.time.com/time/magazine/article/0,9171,760661,00.html, accessed September 30, 2011.

[27] "ARMY & NAVY: Wart on the Pacific," *Time Magazine*, January 30, 1939.

[28] "ARMY & NAVY: Wart on the Pacific," *Time Magazine*, January 30, 1939.

[29] Rottman, *World War II Pacific Island Guide: A Geo-Military Study,* 345; Rogers, *Destiny's Landfall,* 151.

peninsula, and began work on another airstrip near Agana.[30] The strip at Agana would not be completed before the United States recaptured the island in 1944.

After the American invasion in July and August 1944, the U.S. Marine Corps took charge of the Orote field, and military engineers rebuilt and lengthened the runway to 5,500'. Navy Construction Battalions (Seabees) constructed hardstands, shops, and warehouses along the field. By early August 1944, fighter aircraft were operating from the field, and the Marines and Navy operated an aviation supply depot at the base. The Navy also completed the Japanese airfield at Agana, and extended the runway to 7,000' and constructed a second asphalt-covered 6,000' runway. The field at Agana was used primarily as a passenger and freight center. Finally, using an area that the Japanese had cleared for a third airfield, the Navy established Depot Field, with a 7,000' strip, 12,000' taxiway, and forty-two hardstands. The Seabees and the Army Engineers also constructed eight superstructure hangars and ten repair hangars, creating the largest air repair base in the Pacific for the new Very Heavy Bomber/Very Long Range (VHB/VLR) B-29 Superfortress.[31]

The B-29 Superfortress and the Strategy of Strategic Bombing

The introduction of military uses for the airplane during World War I opened a new dimension for the battlefield. Originally used for reconnaissance and later as air superiority fighters and for close air support, some military theorists viewed the aircraft in other ways. Italian air power advocate Giulio Douhet published *The Command of the Air* in 1921, which argued for large-scale bombing of the factories and the industrial might of a nation, making it impossible to continue a fight.[32] Douhet's beliefs were championed in America by Army General William "Billy" Mitchell, former commander of all American air-combat units in World War I. After angering the Army and Navy leadership with his calls for a larger air force, Mitchell was court-martialed for insubordination. However, as World War II started, unrestricted aerial bombardment became an important part of the war strategy of the Allies.

The introduction of the B-29 Superfortress in 1944 allowed the AAF to conduct large-scale raids from China on the industrial centers of Japan. The bombers were placed under the Twentieth Air Force that was commanded by General Henry H. Arnold, AAF Commanding General.[33] However, because the bases in China were hard to supply, the AAF reassigned the B-29s to the XXI Bomber Command, under the Twentieth Air Force, and decided that the new force would be based in the Marianas Islands after their capture.

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[30] United States, *Building the Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps, 1940-1946* (Washington: U.S. Government Printing Office, 1947), 345.

[31] United States, *Building the Navy's Bases in World War II,* 350-352.

[32] Bernard C. Nalty, *Winged Shield, Winged Sword: A History of the United States Air Force, Volume I* (Washington, D.C.: Air Force History and Museum Program, 1997), 48.

[33] Ray S. Cline, *Washington Command Post: The Operations Division* (Washington: Office of the Chief of Military History, Dept. of the Army, 1951), 252-255.

Construction of North Field and the Arrival of the B-29s

The U.S. Army constructed five B-29 airfields in the Mariana Islands after their liberation. Two bases were constructed on Tinian and one on Saipan, and the two remaining airfields—Northwest Field and North Field—were constructed on Guam in the area that is now Andersen AFB. North Field was constructed by the U.S. Army's 854th Engineer Aviation Battalion (EAB), which was under the operational control of the U.S. Navy's Fifth Naval Construction Brigade.[34]

The EAB was an Army unit that was equipped to construct an airfield and all of its support facilities, as well as with the capacity to camouflage, maintain, and defend airfields.[35] In 1939, General Arnold had requested that the U.S. Army Corps of Engineers create a special engineer unit with the mission of constructing and repairing airfields. The next year, the War Department established the 21st Engineers (Aviation) Regiment at Fort Benning, Georgia. By the time of the Japanese attack on Pearl Harbor, the Army had twelve EABs, which quickly expanded to fifty-one battalions by the end of 1942. During World War II, an EAB had 33 officers and 744 enlisted men and was equipped with diesel tractors, bulldozers, carry-all scrapers, graders, gasoline shovels, rollers, mixers, air compressors, drills, trucks, trailers, asphalting and concreting equipment, rock crushers, draglines, and pumps.[36]

The 854th EAB, which constructed the North Field, was organized at March Field, California, on January 1, 1943. The unit trained in the states before leaving San Francisco on December 1, 1943, and arriving in Kwajalein on February 2, 1944, after stopping in Hawai'i.[37] Throughout World War II, the 854th EAB was commanded by Colonel Herbert E. Brown Jr. Brown was born on February 14, 1915, in Minneapolis, Minnesota, and he joined the Army in 1938 after graduating from the University of Minnesota. After World War II, Brown continued to serve in the U.S. Army Corps of Engineers until retiring in 1964. After his military service, Brown was the Director of Physical Plant at California State University, San Bernardino, for the next ten years. He passed away on June 22, 2000.[38]

On October 9, 1944, the 854th EAB arrived in Guam after successfully constructing an airfield on Kwajalein. While the primary mission of the 854th EAB was the construction of the new airfields for the B-29s, elements of the 854th EAB were first assigned to aid the Navy's Seabees in completing the Depot Field's repair facilities that would be needed by the bombers. On

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[34] "A Brief History of Anderson AFB (1945-1985)." On File, Base Historian, Andersen, AFB, Guam.

[35] Karl Christian Dod, *The Corps of Engineers: The War against Japan* (Washington, D.C.: Office of the Chief of Military History, U.S. Army [for sale by the Supt. of Docs., U.S. Govt. Print. Off.], 1966), 685.

[36] National Museum of the U.S. Air Force, "Engineer Aviation Battalions Fact Sheet," electronic resource, http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=1525, accessed November 3, 2011.

[37] Shelby L. Stanton, *Order of Battle, U.S. Army, World War II* (Novato, CA: Presidio, 1984), 584.

[38] San Diego County, California Obituary Collection. San Diego County, California Obituary Collection 191. Electronic document, http://www.genealogybuff.com/ca/sandiego/webbbs_config.pl/read/191, accessed September 19, 2011.

October 12, one company of the 854th EAB began working 24-hour days to construct the access road to the North Field site. Three days later, on October 15, the entire unit arrived on the northern part of the island to begin surveying for the fields.[39]

When they arrived at the site of the future North Field, the Army engineers found a small clearing with a barbed-wire-enclosed American radio signal detachment that would become their base of operation and the site for North Field. The present-day location of this clearing is undetermined. The 854th EAB constructed a drafting room near the radio site. Soon three surveying parties, each equipped with a D-8 bulldozer, halftrack, and submachine guns, began clearing the location.[40] The surveyors laid out three baselines that would serve as the basis for the new runways.[41] The preliminary survey was completed on November 15, 1944, and the layout map for North Field was approved on December 1, 1944.[42] Colonel Brown described the plans for North Field:

> The plan provided for two parallel runways 1,000 feet on centers and each runway was 10,500 feet long by 500 feet wide, with the asphaltic concrete covering 8,500 feet by 200 of the runway surface. The taxiways were located between the runways and on either side of the field while the taxi-loops were located off the taxiways. The entrances to the taxiways and hardstands were 100 feet wide with 80 feet of asphalt surface. Each hardstand was an asphalt-surfaced circle 120 feet in diameter with 10-foot shoulders. The hardstands were perpendicular to the taxiways with alternating distance of 340 feet and 185 feet, respectively, from center of taxiway to center of hardstand. Grade specifications called for a 1 per cent maximum longitudinal grade on the runways and 1.5 per cent on taxiways; all sections were crowned with a 1 per cent transverse grade on black top and 1.5 per cent on shoulders. The warm-up aprons were 200 feet by 3,500 feet and extended across both ends of the field. There were two service aprons 300 feet by 2,000 feet and four sub-service aprons 300 feet by 800 feet located on the base. The other utilities included tank farms, one 75-foot control tower, and housing Area for Wing headquarters, VLR Bombardment Groups and VLR Service Groups.[43]

The original plans for North and Northwest Fields were to provide two standard VHB runways and facilities to support two groups at each base. However, the engineers selected sites and

[39] Brown, "Aviation Engineers on Guam," 399.
[40] Dod, *The Corps of Engineers: The War against Japan,* 517.
[41] Brown, "Aviation Engineers on Guam," 399.
[42] Brown, "Aviation Engineers on Guam," 399.
[43] Brown, "Aviation Engineers on Guam," 399.

prepared layouts for basing an entire wing on each airfield. On January 25, the Army approved expanding the bases to be able to house two B-29 wings each.[44]

After the plans for the airfield were approved, construction began on the South Taxiway and Southwest Taxiway Loop, which included sixty hardstands and required movement of 450,800 cubic yards of coral. The taxiway and taxiway loop were completed on February 1, 1945. The engineers also began work on the Control Tower, which was built in 15 days, and began clearing the area for the construction of the Wing Headquarters and other areas, as well as constructing a sawmill and drilling several water wells. In order to complete the field, the 854th EAB established a quarry, rock crusher, and asphalt plant to produce the materials to cover the runway with 2.5" of asphaltic concrete surface. After the completion of the southern taxiway, the engineers began work on the north runway. The 854th EAB moved 326,400 cubic yards of earth in 35 days and completed the runway in 50 days, setting an unofficial Marianas record and serving as one of the reasons for the unit's being awarded a Meritorious Unit Plaque. The second strip on North Field was not paved to its full length until May 1, 1945, while taxiways, hardstands, and service aprons were only partially constructed at that time.[45] In addition to the runways, the 854th EAB constructed hundreds of Quonset huts that were used for housing, support, administration, and other functions.[46]

According to Yoklavich and Tuggle, the design of the hardstands evolved during the course of construction. During their research, they discovered a letter dated February 12, 1945, that stated the hardstands should "vary in depth so that parked planes will not lie in a line."[47] The hardstands along the South Taxiway of North Field were staggered in that manner to protect the B-29s from possible Japanese attack. However, because of the need to complete the base, and the decline of Japanese airpower, the hardstands constructed along the South Taxiway Loop were uniform. The hardstands along the Center Taxiway were constructed with alternating depths, probably before the change in policy.[48]

Construction of the North Field was difficult for various reasons. First, the jungle was so dense in Guam that the 854th EAB was forced to clear a path for the heavy machinery to reach the project area. Also, the trail was "lined with Japanese corpses," and there was always the threat of attack by rogue Japanese forces.[49] Colonel Brown stated:

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[44] Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II, Vol. 5: The Pacific: Matterhorn to Nagasaki, June 1944 to August 1945* (Chicago: University of Chicago Press, 1953), 519.

[45] Craven and Cate, *The Army Air Forces in World War II, Vol. 5,* 520.

[46] Brown, "Aviation Engineers on Guam," 399-401.

[47] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 14.

[48] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 14.

[49] Craven and Cate, *The Army Air Forces in World War II, Vol. 5,* 307.

> Mother nature made this construction job a hard and grueling grind in the sticky heat . . . together with the ever-present dengue-infested mosquitoes . . . the northern part of Guam was still . . . a mystery to the engineering world. Aerial photographs that were on hand failed to show contours or even the few native trails obscured by thick tropical growth.[50]

The construction statistics for North Field were remarkable:

- 847 acres of jungle cleared
- 1,231,700 cubic yards of earth moved to form an airfield surface of 1,595,400 square yards (the equivalent of a two-lane highway 91 miles long)
- 828,00 square yards of asphaltic concrete
- 2,142 cubic yards of concrete
- 966,000 board-feet of lumber
- Trucks ran over 908,000 miles (the equivalent of one truck making 36 trips around the world)
- 6.5 tons of welding rods used
- 67 miles of survey lines cleared
- 181 Quonset huts and 902 frame buildings constructed
- 3,304 signs painted[51]

After overseeing the construction of North Field, the 854th EAB moved on June 24, 1945, to Ie Shima and then on June 25, 1945, to Okinawa, where the unit remained until it was demobilized on March 15, 1946.[52] The unit was moved to the Organized Reserve Corps in 1949 and remains a reserve unit in New York. For its service in the Pacific, the 854th Engineer Aviation Battalion received the Meritorious Unit Commendation (Army) streamer embroidered ASIATIC-PACIFIC THEATER.[53] The Meritorious Unit Commendation is awarded to units for exceptionally meritorious conduct in performance of outstanding services for at least six continuous months during a period of military operations against an armed enemy on or after January 1, 1944. Although service in a combat zone is not required, the unit's accomplishments must be directly related to the larger combat effort. The unit must display such outstanding devotion and superior performance of exceptionally difficult tasks as to set it apart from and above other units with similar missions. The degree of achievement required is the same as that which would warrant award of the Legion of Merit to an individual.[54]

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[50] Brown quoted in Dod, *The Corps of Engineers: The War against Japan,* 517.
[51] Brown, "Aviation Engineers on Guam," 401.
[52] Stanton, *Order of Battle, U.S. Army, World War II,* 584.
[53] U.S. Army Center of Military History, 2011.
[54] 32 Code of Federal Regulations, Volume 3. Chapter V, Part 578.59.

World War II Operations from North Field

On February 3, 1945, the first runway at North Field was completed, and Colonel Thomas S. Powers, commander of the 314th Bombardment Wing (BW), took control of the field from the engineers. Colonel Powers was born on June 18, 1905, in New York City and graduated from Barnard School for Boys. In 1928, he entered the Air Corps flying school and received his commission as a second lieutenant in 1929. At the start of World War II, Powers was a B-24 pilot in North Africa and Italy, and quickly rose to be commander of the 314th BW in 1944 under General Curtis LeMay's XXI Bomber Command. After his command in Guam, Powers was named the Deputy Chief of Operations under General Carl Spaatz during the atomic attacks on Hiroshima and Nagasaki. After the war, Powers again served with LeMay as the Vice Commander in Chief of the newly created Strategic Air Command. In 1957 Powers succeeded LeMay as Commander in Chief of SAC, a post that he filled for seven years. Power was known as "an outspoken proponent of nuclear deterrence, a policy of peace through the achievement of overwhelming nuclear superiority. He favored patriotism, preparedness, and a tough policy toward the Communist enemy."[55]

Soon after the handover of the base, Major General LeMay landed the first B-29 at the field, and soon the entire 314th BW arrived. The 314th BW was activated on April 23, 1944, at Peterson Field, Colorado, and assigned to the XXI Bombardment Command on Guam. The 314th Bombardment Wing was composed of the 19th Bombardment Group, the 29th Bombardment Group, the 39th Bombardment Group, and the 330th Bombardment Group. The call sign for the tower at North Field was "Ranger Tower."[56]

The 314th flew its first combat mission on February 25, 1945.[57] The first mission would serve to change aerial bombing tactics in the Pacific. Previously, the U.S. Army Air Forces used high-altitude nighttime bombing raids on Japanese targets. These tactics did not provide the results the U.S. military wanted. The targets were not destroyed, and many planes missed their marks. On February 25, the mission shifted to using incendiary, low-level daytime attacks. Using after action photographs of the February 25 mission, intelligence personnel determined the raid destroyed an entire square mile of Tokyo, approximately 28,000 buildings.[58] On March 9, 1945, 334 B-29s from the 73rd, 313rd, and 314th BWs carried out an all-incendiary, low-level attack of

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[55] Syracuse University Library, "Thomas S. Power Papers Finding Aid," electronic resource, http://library.syr.edu/digital/guides/p/power_ts.htm#d2e47, accessed November 3, 2011.

[56] Robert A. Mann, *The B-29 Superfortress: A Comprehensive Registry of the Planes and Their Missions* (Jefferson, NC: McFarland &Company, 2004), 7.

[57] "A Brief History of Anderson AFB (1945-1985)." On File, Base Historian, Andersen, AFB, Guam.

[58] Gary Gray, "20th Air Force," CBI Order of Battle, electronic resource, http://www.cbi-history.com/part_vi_20th_af-2.html, accessed November 3, 2011.

Tokyo. The raid was successful beyond the initial hopes. Winds created a firestorm, creating an environment where canals boiled and glass melted.[59]

For the remaining months of the war, the 314th BW conducted daylight raids against strategic objectives, bombing aircraft factories, chemical plants, oil refineries, and other targets in Japan. These units also participated in several incendiary raids on Tokyo and other Japanese cities. Later in 1945, they mixed their missions between precision attacks against specific targets and fire raids against urban areas. Table 2 lists the missions flown by the 314th BW. Immediately after the end of the war, wing aircraft carried supplies to American prisoners of war. After Powers, Colonel Carl R. Storrie took command of the 314th BW on July 23, 1945. Storrie had been instrumental in the development of the low-level bombing technique that was used in Japan.[60]

Table 2. Missions Flown by the 314th Bombardment Wing in 1945.

Date	Target	Location	No. of Aircraft	No. of Aircraft Lost
25-Feb-1945	Northeast Tokyo	Tokyo	11	0
4-Mar-1945	Nakajima Aircraft Factory	Tokyo	9	Unknown
9-Mar-1945	Urban Area	Tokyo	54	8
11-Mar-1945	Urban Area	Nagoya	42	0
13-Mar-1945	Urban Area	Osaka	45	0
16-Mar-2011	Urban Area	Kobe	52	0
18-Mar-1945	Urban Area	Nagoya	49	0
24-Mar-1945	Mitsubishi Aircraft Plant	Nagoya	50	0
27-Mar-1945	Kanoya Airfield	Kyushu	44	0
27-Mar-1945	Omura Airfield	Moura	44	0
30-Mar-1945	Mitsubishi Aircraft Plant	Nagoya	14	0
31-Mar-1945	Kyushu Airfields	Kyushu		0
31-Mar-1945	Omura Airfield	Osaka	34	0
3-Apr-1945	Aircraft Plant	Shizuoka	49	0
7-Apr-1945	Mitsubishi Aircraft Plant	Nagoya	63	2
12-Apr-1945	Hodagaya Chemical Works	Koriyama	85	3
13-Apr-1945	Tokyo Arsenal	Tokyo	113	3
15-Apr-1945	Urban Area	Kawasaki	108	6

[59] Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 454-455.

[60] Henry C. Dethloff and John A. Adams, *Texas Aggies Go to War: In Service of Their Country* (College Station: Texas A&M University Press, 2008).

Table 2. Missions Flown by the 314th Bombardment Wing in 1945.

Date	Target	Location	No. of Aircraft	No. of Aircraft Lost
17-Apr-1945	Nittagahara Airfield	Kyushu	10	0
17-Apr-1945	Kanoya Airfield	Kyushu	34	0
18-Apr-1945	Kanoya Airfield	Kyushu	33	0
18-Apr-1945	Nittagahara Airfield	Kyushu	11	0
21-Apr-1945	Kanoya Airfield	Kyushu	33	0
21-Apr-1945	Kushira Airfield	Kyushu	31	0
21-Apr-1945	Nittagahara Airfield	Kyushu	23	0
22-Apr-1945	Miyasaki Airfield	Kyushu	22	0
24-Apr-1945	Hitachi Aircraft Factory	Tachikawa	42	2
26-Apr-1945	Kanoya Airfield	Kyushu	22	0
26-Apr-1945	Kushira Airfield	Kyushu	22	0
26-Apr-1945	Kokubu Airfield	Kyushu	22	0
26-Apr-1945	Miyakonojo Airfield	Kyushu	20	0
27-Apr-1945	Kanoya Airfield	Kyushu	21	0
27-Apr-1945	Kushira Airfield	Kyushu	19	1
28-Apr-1945	Kanoya Airfield	Kyushu	23	1
29-Apr-1945	Kushira Airfield	Kyushu	20	0
30-Apr-1945	Kanoya Airfield	Kyushu	11	0
30-Apr-1945	Kanoya East Airfield	Kyushu	11	0
30-Apr-1945	Kokubu Airfield	Kyushu	10	0
30-Apr-1945	Oita Airfield	Kyushu	11	0
30-Apr-1945	Tomitaka Airfield	Kyushu	10	0
30-Apr-1945	Saeki Airfield	Kyushu	11	0
30-Apr-1945	Tachiarai Airfield	Kyushu	11	0
30-Apr-1945	Miyazaki Airfield	Kyushu	11	0
30-Apr-1945	Miyakonojo Airfield	Kyushu	11	0
3-May-1945	Kanoya Airfield	Kyushu	11	1
3-May-1945	Kokubu Airfield	Kyushu	11	1
3-May-1945	Oita Airfield	Kyushu	22	1
4-May-1945	Omura Airfield	Kyushu	10	0
4-May-1945	Saeki Airfield	Kyushu	9	0
4-May-1945	Matsuyama Naval Air Station	Kyushu	19	0
4-May-1945	Oita Airfield	Kyushu	17	0
4-May-1945	Tachiarai Airfield	Kyushu	11	0
5-May-1945	Kanoya Airfield	Kyushu	11	1

Table 2. Missions Flown by the 314th Bombardment Wing in 1945.

Date	Target	Location	No. of Aircraft	No. of Aircraft Lost
5-May-1945	Chiran Airfield	Kyushu	11	0
5-May-1945	Ibusuki Airfield	Kyushu	10	0
7-May-1945	Kanoya Airfield		21	0
10-May-1945	Oil Refinery	Otake	132	1
11-May-1945	Kawanishi Aircraft Factory	Fukae	40	1
14-May-1945	Urban Area	Nagoya	144	4
16-May-1945	South Urban Area	Nagoya	131	0
19-May-1945	City of Hamamatsu	Hamamatsu	88	4
23-May-1945	Urban Area	Tokyo	160	2
25-May-1945	South Central Urban Area	Tokyo	138	2
29-May-1945	Urban Area	Yokohama	146	3
1-Jun-1945	Urban Area	Osaka	118	2
5-Jun-1945	Urban Area	Kobe	129	2
7-Jun-1945	Urban Area	Osaka	119	1
9-Jun-1945	Hitachi Aircraft Factory	Chiba	27	0
10-Jun-1945	Kasumigahara Seaplane base	Kasumigahara	32	0
10-Jun-1945	Hitachi Aircraft Parts	Chiba	32	0
10-Jun-1945	Nakajima Aircraft Factory	Ogikubu	65	1
15-Jun-1945	Osaka/Amagaski Urban Area	Osaka	135	1
17-Jun-1945	Urban Area	Kagoshima	120	1
19-Jun-1945	Urban Area	Shizuoka	137	2
22-Jun-1945	Mitsubishi Aircraft Plant	Tamashima	124	2
26-Jun-1945	various	Nagoya	102	1
26-Jun-1945	Sumitome Light Metals	Nagoya	33	0
26-Jun-1945	Kita-Shioya Aircraft Factory	Kagoshima	35	2
28-Jun-1945	Urban Area	Nobeoka	122	0
1-Jul-1945	Urban Area	Shimonoseki City	142	1
3-Jul-1945	Urban Area	Tokushima	137	0
6-Jul-1945	Urban Area	Kofu	138	0
9-Jul-1945	Urban Area	Gifu	135	2
12-Jul-1945	Urban Area	Uwajima	130	0

Table 2. Missions Flown by the 314th Bombardment Wing in 1945.

Date	Target	Location	No. of Aircraft	No. of Aircraft Lost
16-Jul-1945	Urban Area	Hiratsuka	137	0
19-Jul-1945	Urban Area	Okazaki	131	0
24-Jul-1945	Urban Area	Tsu	NA	0
26-Jul-1945	Urban Area	Omuta	130	1
28-Jul-1945	Urban Area	Ogaki	97	0
1-Aug-1945	Urban Area	Mito	168	0
5-Aug-1945	Urban Area	Nishinomiya	135	0
7-Aug-1945	Toyokawa Naval Arsenal	Toyokawa	33	2
7-Aug-1945	Urban Area	Yawata	69	3
9-Aug-1945	Nakajima Aircraft Factory	Tokyo	78	2
14-Aug-1945	Urban Area	Kumagaya	164	0
14-Aug-1945	Urban Area	Isesake	88	1

Source: Mann, *The B-29 Superfortress: A Comprehensive Registry of the Planes and Their Missions*, 140-172.

Post-World War II and Korean Operations at Andersen AFB

During the Cold War, North Field (later renamed Andersen AFB) served as one of the primary American Air Force bases in the Pacific and was critical in the fielding of the American nuclear deterrent during the 1950s and 1960s, as well as providing a base for bomber support of operations during the Korean and Vietnam wars.

After the Japanese surrendered in August 1945, the AAF continued to operate North Field. B-29s from North Field dropped food and supplies to Allied prisoners and participated in several show-of-force missions over Japan. The 29th, 39th and 330th Bomb Groups returned to the United States and were inactivated in December 1945 while the 19th remained on Guam to become the host unit at the station when the 314th BW was reassigned to Johnson Air Base, Japan, for occupation duty. For approximately two years (1946-48) the 314th BW served as one of the Fifth Air Force's major components. It maintained intensive training schedules, participated in training exercises, and took part in the post-hostilities program of mapping Japan.[61]

Between World War II and the Korean War, North Field underwent seven name changes. Table 3 provides a list of the names and dates of designation. The base was finally named after Brigadier General James Roy Andersen, who had graduated from the U.S. Military Academy in

[61] Air Force Historical Research Agency, "314 Air Division," electronic resource, http://www.afhra.af.mil/factsheets/factsheet.asp?id=10130.

Table 3. Chronology of the Names of Andersen AFB.[62]

Name	Date of Designation
North Field Air Base Command	May 9, 1946
North Army Air Base	Unknown
North Air Force Base	March 1, 1948
North Guam Air Force Base	April 22, 1948
North Field Air Force Base	February 1949
North Guam Air Force Base	March 1949
Andersen Air Force Base	October 7, 1949

1926 and received his aviator wings at Randolph Field, Texas. He served as Director of Training at Stewart Field Basic-Advanced flying school for the Military Academy. In 1943, he served in the Strategy Section of the Operations Division of the War Department General Staff. In January 1945, Andersen was promoted to Brigadier General and selected as Chief of Staff of the Army Air Forces, Pacific Ocean Area. He died in February 1945, when the B-24 Liberator aircraft he was flying between Kwajalein and Hawai'i crashed.[63]

North Korea's invasion of South Korea on June 25, 1950, signaled the next phase in Andersen AFB's history. The Korean War was the model of Cold War engagements where the Soviet Union and the United States used allied or proxy states to fight limited wars as a means to expand their sphere of influence. The Communist North Korea attacked the U.S.-Allied South Korea in hopes of uniting the nation under Communist rule. The North Korean invasion was met by combined military might of the United States, South Korea, and other western allies. At the time of the invasion, the 19th Bomber Group located at Andersen AFB was the only unit with B-29s in the Pacific Rim. The Air Force quickly deployed the B-29s to Kadena AFB, Okinawa, and they began bombing targets in North and South Korea. On June 26, 1950, other SAC units, including the 92d Bomb Group that was headquartered at Andersen AFB, left the United States bound for bases in the Pacific to support American military operations on the Korean Peninsula.[64] In July 1950, within two weeks of the outbreak of the Korean War, the U.S. Air Force reactivated the Far East Bomb Command using B-29 Superfortress bombers operating out of Andersen AFB and Northwest Field in Guam to provide both tactical and strategic bombing capabilities to the commanders in the field.[65] During July 1950, President Truman

[62] Selected Data on Andersen AFB, Guam. On File, Base Historian, Andersen, AFB, Guam.

[63] "Biography of Brigadier General James Roy Andersen." On File, Base Historian, Andersen, AFB, Guam.

[64] Kurt Wayne Schake, *Strategic Frontier: American Bomber Bases Overseas 1950-1960* (Trondheim: Historisk Institutt det Historisk-Filosofiske Fakultet NTNU, 1998), 53.

[65] Jayne Aaron, *Regional Cold War Historic Context for the Military Installations, Including Air Force, Navy, and Army, in Guam and the Northern Mariana Islands* (Legacy Resource Management Program, Report 09-454, 2011), 3-18 – 3-19.

authorized the deployment of atomic weapons (without the cores), and ten B-29s capable of delivering the weapons to Andersen AFB to provide a nuclear strike if necessary.[66]

Because of the introduction of the MiG-15 jet fighter, which was very deadly to the bombers, and the almost total destruction of all strategic targets in the north, the B-29s spent most of the Korean War conducting nighttime missions targeting the North Korean supply lines. From 1950 to 1953, B-29s flew 21,328 sorties over Korea, dropping 167,000 tons of bombs. To compare, during World War II, B-9s flew approximately 35,000 sorties and dropped 169,000 tons of bombs.[67]

SAC Basing at Andersen AFB (1950s and 1960s)

In addition to the Korean War, Andersen AFB gained a strategic nuclear mission with the arrival of SAC forces during the early 1950s. The atomic (or nuclear) bomb characterized the Cold War like no other object. In the late 1940s, the United States used the threat of atomic weapons (atomic diplomacy) as a means to control perceived Soviet expansion. After the Soviets obtain nuclear weapons, both nations embraced a balance of power through mutually assured destruction (MAD), which stated both sides had maintained enough nuclear weapons to survive a first strike and to launch a retaliation that would destroy the other side. This uneasy balance was preserved by the deployment of different weapons platforms, including bombers. During the 1950s, the Eisenhower Administration, not wanting to get into a conventional arms race with the Soviets, used the threat of nuclear weapons and a massive retaliation to any Soviet military action as the cornerstone of the national security policy.[68]

Established in 1946, the SAC was created to oversee the Army Air Forces' (and later the Air Force's) long-range bombing forces and "to conduct long range offensive operations in any part of the world either independently or in cooperation with land and Naval forces."[69] In 1948, Lieutenant General Curtis LeMay, former commander of the XXI Bomber Command, became commander of SAC and expanded the command into America's strategic nuclear strikeforce.[70] Until the deployment of intercontinental ballistic missiles (ICBMs) in the late 1950s, SAC

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[66] Roger Dingman, "Atomic Diplomacy during the Korean War." *International Security* (Winter 1988-89) 13 (3): 63.

[67] Lou Fulgaro, *Giants Over Korea: A Sky Too Far* (Bloomington, IN: 1stBook, 2003), 86. The primary reason that B-29s flew more missions during World War II, but delivered the same amount of bombs, was that the bombers during World War II had to fly farther and use more fuel, lessening their bomb loads.

[68] See Walter Hixson, "Proliferation: The United State and the Nuclear Arms Race," *The American Military Tradition from Colonial Times to the Present*. Second Edition. Edited by John M. Carroll and Colin F. Baxter (Lanham: Rowman & Littlefield Publishers, 2007), 267-288.

[69] Norman Polmar, *Strategic Air Command: People, Aircraft, and Missiles* (Annapolis, Maryland: The Nautical and Aviation Publishing Company of America, Inc., 1979), 2.

[70] Polmar, *Strategic Air Command*, 11.

bombers were tasked as the primary means of delivering America's strategic nuclear arsenal in the event of a war with the Soviet Union.[71]

LeMay saw the need to scatter SAC forces across the globe as a deterrent to the Soviet Union. By late 1950, the command was using or preparing facilities in Puerto Rico, the United Kingdom, Guam, Okinawa, Alaska, and French Morocco. Each of these regions was controlled by a separate theater commander; however, LeMay stressed that SAC forces, unlike other American military commands, were under the Joint Chiefs of Staff. This allowed him to consolidate control of SAC forces. This argument was perfectly in accord with air power theory: mission, not geography, should dictate the command arrangements for strategic assets.[72]

By September 1950, two SAC bomber groups (22d and 93d Bomb Groups) were operating in the Far East. These units did not possess bombers capable of delivery of nuclear weapons; however, the 43d Bomb Wing at Andersen AFB possessed the B-50 bomber and was capable of carrying atomic weapons.[73] While the other two groups were attached to the local theater command, the 43d Wing remained under operational control of SAC through SAC X-Ray in Japan and remained part of the larger strategic plan.[74]

In 1951, Andersen AFB was one of several overseas locations selected by SAC to support rotational bomber deployments from stateside bases. Because of the limited range of bombers in the 1950s (the B-50 bomber's combat range was only 4,650 miles), SAC had to deploy much of its bomber fleet to foreign bases so they could reach their targets within the Soviet Union quickly. SAC operated nine sites in foreign countries, as well as rotational bombers bases in Puerto Rico, Alaska, and Guam. SAC commanders deployed seven medium bombardment groups, two strategic reconnaissance groups, and selected squadrons to overseas locations for projecting their force again Communist China and Soviet Pacific targets. In the Pacific Rim, SAC sent several squadrons of B-50 bombers and KC-29 refueling tankers to Andersen AFB and bases in Japan for 90-day rotational duties.[75] Table 4 provides a list of the units that conducted rotations at Andersen from 1947 to 1960.

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[71] American forces had other ways to deliver tactical nuclear weapons, including short-range cruise missiles, rockets, and artillery pieces; however, the bomber was the only weapons platform at the time that was capable of hitting Soviet cities, military bases, and industrial centers.

[72] Schake, *Strategic Frontier,* 57, 141.

[73] The B-50 was an improved version of the B-29 that was supposed to be able to deploy atomic weapons and have a longer range. However, the aircraft was plagued with problems, including a bomb bay too small for the Type III nuclear weapons deployed in the late 1940s and engines that were not always reliable. Jim Winchester, *Military Aircraft of the Cold War* (San Diego: Thunder Bay Press, 2006), 32-33.

[74] Schake, *Strategic Frontier,* 56.

[75] National Museum of the U.S. Air Force, "Boeing B-50A Fact Sheet," electronic resource, http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=2606, accessed February 7, 2012;.Polmar, *Strategic Air Command,* 26.

Table 4. SAC Units Rotated at Andersen AFB, 1947-60.

Year	Rotation Dates	Bomber Units
1947	July 1–October 15	654th Bomber Squadron
1948-50	March 26, 1948–July 5, 1950	30th Bomber Squadron
1950-53	August 17, 1950–June 1, 1953	19th Bomber Wing
1954	July 10–October 8	509th Bomber Wing, 715th and 830th Bomber Squadron
1954	July 12–October 8	393 Bomber Squadron
1954-55	October 16, 1954–January 12, 1955	92d Bomber Wing, 325th and 326th Bomber Squadrons
1955	January 14–April 12	5 Bomber Wing
1955	April 22–July 24	717 and 718 Bomber Squadrons
1955	August 1–November 3	334, 335, and 336 Bomber Squadrons
1955-56	October 31, 1955–January 26, 1956	6 Bomber Wing, 24, 39, and 40 Bomber Squadrons
1956	January 29–April 25	99 Bomber Wing, 346 and 347 BS
1956	April 26–July 5	92 BW, 325 BS
1956	July 12–October 4	303 BW, 358, 359, 360, BS
1956-57	October 5, 1956–January 11, 1957	320 Bomber Wing, 443 Bomber Squadron
1957-60	July 1, 1957–March 8, 1960	327 AD

Source: Polmar, *Strategic Air Command.*

With the rotation of American bombers to Guam, in 1952, the U.S. Air Force and Navy established nuclear weapons storage facilities at Andersen AFB and Fena Naval Magazine on Guam.[76] By 1957, a "Q Area"[77] was shown at Andersen AFB; however, the SAC Bombers at Guam had been deploying nuclear weapons since April 1951, so it can be assumed there was some temporary storage facility before that time.[78]

In August and September 1953, SAC conducted OPERATION BIG STICK, the first mass B-36 flight to the Pacific Rim, which was designed to demonstrate the ability of the U.S. military to deploy its strategic nuclear bombers to Asia as a means to counter the threat of Communist Chinese expansion. The B-36 was developed by Consolidated Vultee (later Convair) during World War II as strategic bomber; however, unlike the B-29, the B-36 had an intercontinental range. The B-36 Peacemaker, which carried 86,000 pounds of nuclear or conventional bombs, became

[76] Rogers, *Destiny's Landfall*; Aaron, *Regional Cold War Historic Context for the Military Installations*, 3-22.

[77] "Q Area" is a term used to describe nuclear weapons storage and assembly areas in the 1950s and 1960s.

[78] Schake, *Strategic Frontier,* 141; KEA Environmental, Inc. (KEA), *Cold War Infrastructure for Strategic Air Command: The Bomber Mission* (Prepared for Headquarters, Air Combat Command, Langley Air Force Base, VA, November 1999), 98.

operational in 1948. By 1954, the Air Force had received over 380 B-36s; however, in 1958 SAC replaced the B-36 with the all-jet B-52.[79] Using bombers from the 92d Bomb Wing, SAC deployed eight B-36s to bases in Japan, Okinawa, and Andersen AFB as a means to demonstrate American military power in the region after the end of hostilities in Korea.[80]

As SAC transitioned from the smaller B-29 and the B-50 bombers to the massive B-36 bombers, all SAC airfields required runway extensions to 11,000' and longer, with extensive subsurface construction to support the very heavy bomber coming into the inventory. The B-36 necessitated 11,000' x 300' runways; new fighter jets soon required 10,000' x 200' runways. Very high landing speeds demanded longer clear zones (overruns). High contact pressures (which were partially offset by the development of multiple-tire landing gear) necessitated thicker pavements and higher-quality materials.[81]

In 1954-55, the 822d Engineer Battalion was assigned to construct new hardstands for the larger bombers at Andersen AFB.[82] The next year, the 809th Engineer Battalion (Heavy Construction) completed the two-year extension of the south runway. Phase I was a 400' runway extension plus a 900' taxiway extension. Phase II consisted of a final 600' extension of the runway. The project was initially slowed by failures in the machinery; however, the project soon was back on schedule.[83] Finally, in 1957 SAC placed six to eighteen Luria wing hangars for the newer B-47 bomber at Andersen AFB. The new hangar was only at five installations: Altus (Oklahoma); Anderson (Guam); Castle (California); Lincoln (Nebraska); and March (California).[84]

After the end of the Korean War, the U.S. military consolidated its forces in the region. On June 18, 1954, the USAF deactivated the FEAF Bomber Command, and SAC activated the 3rd Air Division at Andersen AFB as a tenant unit and then took over the base completely on April 1, 1955. At that time, SAC had thirty-seven active bases in continental United States, and fourteen overseas bases in Puerto Rico, North Africa, the United Kingdom, and Guam, with Andersen AFB being the only SAC base in the Pacific Rim. SAC had discontinued use of the bases in Okinawa and Alaska. The B-29s that had been based at Andersen were replaced with the newer B-47 bombers supported by KC-97 tanker aircraft. As the only base in the region, Andersen was the home to the B-36 bomber wings that SAC was deploying and rotating around

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[79] National Museum of the U.S. Air Force, "Convair B-36J Peacemaker Fact Sheet," electronic resource, http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=360, accessed November 3, 2011.

[80] Polmar, *Strategic Air Command,* 34; Rogers, *Destiny's Landfall*; Aaron, *Regional Cold War Historic Context for the Military Installations*, 233; Schake, *Strategic Frontier,* 141.

[81] KEA, *Cold War Infrastructure for Strategic Air Command: The Bomber Mission*, 92-93.

[82] Bill Clark, "Hardstands in Guam," *Military Engineer*, July-August 1955:272.

[83] Richard J. Tallon, "Guam Concrete Runway Paving," *Military Engineer*, January-February 1957:15-16. Tallon, "Guam Concrete Runway Paving," 1957:15-16, noted that the South Runway was extended 1,000', but As-Built plans from 1956 show the extension as 2,000' (Strategic Air Command, "Airfield Improvement General Key Plan Layout of Overrun, Center T/W, Hardstand & Road for 4000' Cross-over," As-Built [1956]. On File, Civil Engineering, Andersen AFB, Guam).

[84] KEA, *Cold War Infrastructure for Strategic Air Command: The Bomber Mission*, 71.

the globe during the mid-1950s.[85] On October 15 and 16, 1955, the 92d Bomb Wing, a B-36 unit stationed at Fairchild AFB, Washington, deployed to Andersen AFB for a 90-day rotational training assignment. This was the first time an entire B-36 wing had been deployed to an overseas base.[86]

In addition to serving as a staging base of SAC deterrent forces, Andersen AFB played a critical role in the United States' response to Communist Chinese aggression. During the first Taiwanese Crisis (1954-55), American military planners identified several prospective targets within China that could only be reached by SAC bombers. At that time, thirty SAC B-36s at Andersen AFB were assigned targets in China in the event of a conflict.[87] Secretary of State John Foster Dulles stated that the nuclear weapons deployed in the region were "new and powerful weapons of precision, which can utterly destroy military targets without endangering unrelated civilian centers."[88]

In mid-1958, the SAC wings at Andersen AFB were placed on the newly established "Air Mail" alert. This alert plan called for six bombers to be on 15-minute ground alert at bases in England, Morocco, and Spain. However, since Andersen AFB was SAC's lone base in the Pacific, SAC placed twelve bombers on alert there. This deployed alert force was to act as a quick-response force to counter any Soviet preemptive attack, especially critical after the Soviet launch of Sputnik in 1958 and with the fear that they could now attack America with ICBMs.[89] Six years later, in April 1964, the Third Division switched from B-47/KC-97 to B-52 Stratofortress/KC-135 Stratotanker alert forces, again with aircraft and crews furnished in deployed status from U.S.-based SAC wings.[90]

During the creation of the new alert strategy, Andersen AFB again supported America's response to Communist China's aggression to Taiwan. In 1958, Chinese Communists began to attack the Taiwanese islands of Quemoy and Matsu. To meet this threat, President Eisenhower ordered the Seventh Fleet to the Straits of Formosa. Additionally, SAC increased the number of bombers deployed at Andersen AFB in the event that strategic bombing became necessary to counter the Chinese threat.[91] As before, the crisis was averted and no bombers from Andersen were used.

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[85] Polmar, *Strategic Air Command,* 35, 38, 39.
[86] Development of SAC, 45.
[87] Schake, *Strategic Frontier,* 142.
[88] Dulles quoted in Schake, *Strategic Frontier,* 142.
[89] Schake, *Strategic Frontier,* 165.
[90] Aaron, *Regional Cold War Historic Context for the Military Installations,* 3-32.
[91] Polmar, *Strategic Air Command,* 56-57.

Support of the Vietnam War from Andersen AFB

During the 1960s and 1970s, Andersen AFB again served as the base for American bombers, but this time the target was Vietnam, not Japan. The Air Force deployed the B-52 Stratofortresses to Guam, where they flew thousands of sorties over Vietnam and adjacent countries between June 18, 1965, and August 15, 1973, primarily to support American and South Vietnamese ground operations and to bomb North Vietnamese military targets. The B-52 bombers, which could carry approximately 60,000 pounds of ordnance, were able to fly nonstop from Guam to Vietnam with one in-air refueling over the South China Sea. Two of the reasons for the basing of the B-52s at Andersen AFB—the availability of the U.S. Naval Magazine and lower security concerns—were pivotal in the decision to station bombers on Guam.[92]

ARC LIGHT was the American code name given to the B-52 bombing missions that supported American and South Vietnamese ground combat operations from 1965 to 1973. Secretary of Defense Robert McNamara told the U.S. Senate his reasoning for using the B-52, a strategic bomber, for conventional targets in Vietnam:

> We are faced with very, very heavy jungle in certain portions of South Vietnam, jungle so heavy that it is impossible to find an aiming point in it. We know some of these jungles are used by the Vietcong for base camps and for storage areas. . . . You can imagine that without an ability to find an aiming point there, there is only one way of bombing it and that is with a random pattern. . . . With the force we had (B-52s) trained as it was in pattern bombing . . . the military commanders felt—and I believe this was a proper use of the weapons—that these strikes would destroy certain Viet Cong base areas, and as a matter of fact, they did. . . . There is no other feasible way of doing it.[93]

On June 18, 1965, twenty-seven B-52s from Andersen AFB dropped conventional 750-pound and 1,000-pound bombs on a Viet Cong stronghold during the first ARC LIGHT mission. Because of his experiences during World War II, General William C. Westmoreland, commander of U.S. forces in South Vietnam, was convinced the B-52 bombing missions would be crucial to defeating North Vietnamese forces, so he advocated more bombing missions. From June to December 1965, bombers from the 7th, 320th, and 454th Bombardment Wings based at Andersen AFB completed over 100 missions to South Vietnam.[94]

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[92] Aaron, *Regional Cold War Historic Context for the Military Installations,* 3-37.

[93] Robert McNamara quoted in Carl Berger, Editor, T*he United States Air Force in Southeast Asia, 1961-1973: An Illustrated Account*, Revised Edition (Washington, D.C.: Office of Air Force History, 1984), 149.

[94] Operation ARC Light, Fact Sheet, electronic resource, http://www.afhso.af.mil/topics/factsheets/factsheet.asp?id=15262, accessed November 30, 2011.

Pulitzer-prize winning American journalist Neil Sheehan wrote about the total destruction that the B-52 raids had:

> The B-52s . . . were restricted to bombing suspected Communist bases in relatively uninhabited sections, because their potency approached that of a tactical nuclear weapon. A formation of six B-52s, dropping their bombs from 30,000 feet, could "take out". . . almost everything within a "box" approximately five-eighths mile wide by two miles long.[95]

By November 1966, the Joint Chiefs of Staff ordered an increase in monthly bombing sorties to 800, with 40 percent originating from Andersen AFB. In addition to attacking North Vietnamese and Viet Cong bases, the B-52s also supported land operations that were designed to cripple the Viet Cong forces. On January 7, 1967, U.S. Military Assistance Command, Vietnam (MACV) launched OPERATION CEDAR FALLS, the largest American ground operation of the war.[96] The force included the 1st and 25th Infantry Divisions, 173rd Airborne Brigade, and 11th Armored Cavalry Regiment as well as 14,000 South Vietnamese soldiers, and was tasked with destroying a Viet Cong stronghold north of Saigon. Six B-52D Stratofortress missions consisting of forty-seven sorties were flown prior to January 7, 1967, to attack the Viet Cong in support of this ground operation. By the conclusion of the mission on January 26, ninety-four B-52D sorties had been flown in support of this operation. The B-52 strikes accounted for the majority of the enemy killed, and demonstrated that the Viet Cong's fortified positions could be destroyed by American airpower.[97]

Approximately 100 B-52 bombers were operating at Andersen in 1966 and 1967, and because of the threat of fire from an accident, the Air Force constructed forty steel revetments requiring 4,500 tons of steel, 175,000 tons of coral earth, and 7,000 tons of asphalt.[98] The revetments were a success: "the landscape at Andersen Air Force Base has been somewhat altered by the construction, but facilities for safer aircraft parking have been provided."[99]

The size of the SAC mission supporting the Vietnam conflict was occupying many of the command's aircraft. By late 1970, SAC was flying 1,800 sorties a month supporting ARC LIGHT missions in Vietnam. By July 1971, the ARC LIGHT sortie rate had been reduced to 1,000 sorties a month. While Andersen AFB was busy with the bombers and their crews, on April 1, 1970,

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[95] Neil Sheehan, *A Bright Shining Lie: John Paul Vann and America in Vietnam* (New York: Random House, 1988).

[96] Larry H. Addington, *America's War in Vietnam. A Short Narrative History* (Bloomington: Indiana University Press, 2000), 100.

[97] Berger, Editor, T*he United States Air Force in Southeast Asia, 1961-1973*, 151.

[98] Charles J. Williams Jr., "Airfield Revetments on Guam," *The Military Engineer*, November-December 1967, 438.

[99] Williams, "Airfield Revetments on Guam," 440.

the Eighth Air Force relocated its headquarters to Andersen. By July 1972, a bomber force of 50 B-52Ds, 100 B-52Gs, and over 12,000 personnel was bedded down at Anderson AFB.[100]

In addition to supporting the ARC LIGHT mission, Andersen AFB served as the main support base for maintenance of the Lockheed WC-130E Hercules from the 54th Weather Reconnaissance Squadron operating in the Pacific.[101] The WC-130 was the primary weather reconnaissance aircraft of the U.S. military, and it allowed the military to track storms and cyclones in Pacific, which supported both the war in Vietnam as well as usual military activities.

As the war in Vietnam continued during 1970s, the number of air crews and aircraft increased at Andersen AFB during the spring and summer of 1972 to counter the North Vietnamese's Nguyen Hue Offensive of 1972 (Easter Offensive). Unlike the North's previous military strategy, this operation was designed to destroy much of the South Vietnamese Army and to strengthen the North's position at the Paris Peace Talks. The Northern commanders launched the attack during a time when the United States had few aircraft in Southeast Asia to support the South. Implementing OPERATION BULLET SHOT, the Air Force and Navy quickly deployed additional aircraft to the theater to provide air support. In April and May 1972, as part of OPERATION BULLET SHOT, SAC dispatched an additional 124 B-52s to Andersen AFB, bringing the total number of B-52s to 209.[102] Facilities at the airbase were not ready to house and support the new personnel, which tripled the usual size of the base. The Air Force set up tents, metal buildings, spare barracks, and hotels to house the temporary-duty personnel. In addition to the housing needs, the base struggled to provide other services, such as dining halls and recreation, for the airmen.[103]

After seeing the success of airpower in supporting the South's counteroffensive, the Nixon Administration decided that a new round of aerial attacks on North Vietnam, OPERATION LINEBACKER I, would isolate North Vietnam by destroying its transportation infrastructure, supply depots, and air defense network. Nixon felt that destroying these resources would weaken the North to the point it would accept peace with the South. Again, B-52s from Andersen AFB were heavily involved in the missions. Between March and May, B-52 sortie rates had climbed from 700 to 2,200 per month and they had dropped 57,000 tons of bombs in Quang Tri Province, the site of the First and Second Battle of Quang Tri, alone. During LINEBACKER, B-52s had dropped 150,237 tons of bombs on the north, while Air Force and Navy

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[100] John Treiber, "Know Your Andersen History: Linebacker II., 36th Wing Historian, Andersen Air Force Base, Guam, 2007, electronic document, http://www.andersen.af.mil/news/story_print.asp?id=123077968.

[101] Aaron, *Regional Cold War Historic Context for the Military Installations,* 3-38.

[102] Earl Tilford, *What the Air Force Did in Vietnam and Why* (Maxwell Air Force Base, AL: Air University Press, 1991), 224.

[103] K. Tara, "Christmas on the Rock: Dec. 18–29," 36th Wing Historians Office, electronic document, http://www.pacaf.af.mil/news/story_print.asp?id=123127266.

tactical aircraft had flown 1,216 sorties and dropped another 5,000 tons of ordnance.[104] The mission had its desired effect, as North Vietnamese diplomats changed their demands at the Paris Peace Talks.

However, in late 1972, President Richard Nixon ordered a new round of strategic bombing attacks, known as LINEBACKER II, using aircraft based at Andersen AFB, on Hanoi and Haiphong in response to North Vietnam's exit from peace talks in Paris. Nixon told Admiral Thomas H. Moorer, Chairman of the Joint Chiefs of Staff, "this is your chance to win this war, and if you don't, I'll consider you responsible."[105] The new bombing attacks were supported by Nixon; his National Security Advisor, Dr. Henry Kissinger; and Major General Alexander Haig, Kissinger's military advisor. However, Secretary of Defense Melvin R. Laird and Admiral Moorer opposed the new attacks.[106]

Unlike previous bombing campaigns, OPERATION LINEBACKER II was directed to "destroy all major target complexes in the Hanoi and Haiphong areas, using two distinct types of efforts, both of which had to contend with the monsoon season. An all-weather force of heavy B-52s and smaller F-111 attack aircraft would bomb by night while tactical aircraft would continue to press daytime attacks."[107] To prepare for the campaign, units at Andersen AFB and U Tapao Royal Thai Airfield, Thailand, worked around the clock. The flight line at Andersen AFB housed ninety-nine B-52Gs and fifty-three B-52Ds, while U Tapao fielded fifty-three B-52Ds.[108]

On December 18, 1972, eighty-seven B-52s took off in three waves from Anderson AFB on the first round of attacks. They were joined by KC-135 refueling planes, F-4 fighter escorts, F-105 Wild Weasels (to attack surface-to-air missile [SAM] sites), Navy EA-6 and EB-66 radar-jamming planes, search and rescue teams, and F-4 chaff planes. The B-52 bombing campaign was conducted continuously, with bombers landing at Andersen AFB as the next wave of bombers took off.[109]

After taking Christmas Day off, on December 26, 1972, seventy-eight B-52s from Andersen AFB attacked ten targets including stockpiles of weapons, airfields, and SAM storage units in North

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[104] William P. Head, *War from Above the Clouds: B-52 Operations During the Second Indochina War and the Effects of the Air War on Theory and Doctrine* (Maxwell Air Force Base, AL: Air University Press, 2002), 71; Tilford, *What the Air Force Did in Vietnam and Why*, 238-240.

[105] Richard Nixon quoted in Richard C. Nalty, ed., W*inged Shield, Winged Sword: A History of the United States Air Force, Volume II*, 325. For an overview of Linebacker II, see James R. McCarthy, George B. Allison, and Robert E. Rayfield. *Linebacker II: A View from the Rock* (Washington, D.C.: Office of Air Force History, U.S. Air Force, 1985).

[106] Nalty, *Winged Shield, Winged Sword: A History of the United States Air Force, Volume II*, 325; Stephen Ambrose, *The Christmas Bombings* (New York: Random House, 2005), 403.

[107] Walter J. Boyne, "Linebacker II," *Air Force Magazine*, May 1997, Vol. 80, Number 11.

[108] Boyne, "Linebacker II."

[109] Pamela Feltus, "Linebacker II Bombing Raids," electronic resource, http://www.centennialofflight.gov/essay/Air_Power/Linebacker/AP41.htm, accessed November 10, 2011.

Vietnam. The following day, North Vietnamese leaders tentatively agreed to resume peace talks in January 1973. However, OPERATION LINEBACKER II continued for two additional days until North Vietnam formally agreed to resume talks and reach an agreement.[110]

At the peak of Vietnam operations, over 150 B-52 Stratofortresses at Andersen AFB required five miles of ramp space to accommodate all the planes. According to historian John Treiber, "There had never been such a large concentration of combat-ready B-52s at any time or any place."[111] Air Force historian Robert Kritt stated that "of all the Air Force weapons employed during the war in southeast Asia, none had a more devastating effect on the enemy than the B-52 Stratofortress."[112] OPERATION LINEBACKER II lasted only 12 days, December 18–29, 1972, with a stand-down on Christmas Day. During these 11 days of bombing, 729 B-52 sorties were flown out of a planned 741, and over 15,000 tons of bombs were dropped on North Vietnam (Table 5). The B-52s were supported by 769 tactical aircraft. North Vietnamese forces fired over 1,240 SAMs, and fifteen B-52s were lost. Of the ninety-two B-52 crew members involved in the losses, twenty-six were recovered, twenty-five were declared Missing in Action, thirty-three were captured and became prisoners of war, and eight were killed in action or later died of wounds.[113]

Table 5. LINEBACKER II Sorties from Andersen AFB.

Day	Date	Sorties by 43rd SW	Sorties by 72d SW	Total Planned Sorties
1	December 18, 1972	33	54	129
2	December 19, 1972	33	36	93
3	December 20, 1972	24	30	99
4	December 21, 1972	0	0	30
5	December 22, 1972	0	0	30
6	December 23, 1972	12	0	30
7	December 24, 1972	0	0	30
8	December 26, 1972	33	45	120
9	December 27, 1972	9	21	60
10	December 28, 1972	15	15	60
11	December 29, 1972	18	12	60
Total		**177**	**213**	**741**

Source: Jon Lake, *B-52 Stratofortress Units in Combat, 1955-73*. Osprey Combat Aircraft, 43. (University Park, IL: Osprey Publishing, 2004), 84.

[110] Treiber, "Know Your Andersen History: Linebacker II."
[111] Treiber, "Know Your Andersen History: Linebacker II."
[112] Berger, Editor, T*he United States Air Force in Southeast Asia, 1961-1973, 149.*
[113] Boyne, "Linebacker II."

Andersen AFB during the Post-Vietnam Era

After Vietnam, Andersen AFB returned to its role as part of SAC nuclear bases. In 1976, Supertyphoon Pamela struck Guam, causing over $80 million in damage. In 1983, new B-52Gs arrived at Andersen AFB, which allowed for the bombers to carry AGM-84 Harpoon anti-ship missiles, and AGM-69 "SRAM" missiles. These new weapon systems expanded SAC missions to include sea surveillance operations. In October 1988, the nuclear deterrence mission ended at Andersen, and the bombers became conventional bombers. On October 1, 1989, the administration of Andersen AFB transferred from SAC to the Pacific Air Force's 633rd Air Base Wing. The installation later served as a forward-based logistics support center during operations DESERT SHIELD and DESERT STORM in the early 1990s.[114]

In addition to supporting SAC's nuclear mission, Andersen AFB's runway also supported other important American events in the twentieth century. As part of the National Aeronautics and Space Administration (NASA) space shuttle program, Andersen AFB was designated an alternative landing base that could be used to land the shuttle during an emergency. Also, in February 1986, former president of the Philippines Ferdinand Marcos and his supporters were airlifted from Clark AFB to Andersen AFB and then to Hickam AFB, Hawai'i, after a disputed election.[115]

Andersen forces have also played key roles in humanitarian missions. During Operation New Life, the evacuation of thousands after the fall of Saigon in 1975, Andersen received more than 40,000 refugees and processed another 109,000 for onward transportation to the U.S. mainland. Andersen also played a key role in OPERATION BABY LIFT, the evacuation of 1,500 orphans from Vietnam and Thailand in April 1975. In the early 1990s, Andersen again served as an evacuation spot following eruption of Mount Pinatubo in the Philippines, and in Joint Task Force Pacific Haven, the evacuation of more than 6,000 Kurdish people from Northern Iraq in September 1996.[116]

Andersen AFB remained important during the Global War on Terror. To support OPERATION NOBLE EAGLE, Marine F/A-18 fighters flew combat air-patrol missions from Andersen. Also, between September 2001 and July 2002, 3,211 aircraft, nearly 38,000 passengers, and 60,000 tons of cargo flew through Andersen AFB as part of OPERATION ENDURING FREEDOM.[117]

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[114] "A Brief History of Anderson AFB (1945-1985)." On File, Base Historian, Andersen, AFB, Guam; *Andersen Air Force Base Strategic Crossroads to the Pacific*. On File, Base Historian, Andersen, AFB, Guam.

[115] Frederick J. Shaw and A. Timothy Warnock, *The Cold War and Beyond: Chronology of the United States Air Force, 1947-1997* (Washington, D.C.: Air Force History and Museums Program, 1997), 113; *Andersen Air Force Base Strategic Crossroads to the Pacific*. On File, Base Historian, Andersen, AFB, Guam.

[116] Andersen Air Force Base, Guam. United States Air Force Fact Sheet. April 2003; Robert K. Ruhl, "Towards a New Land and Life," *Airman*, August 1976, 24-30.

[117] Andersen Air Force Base, Guam. United States Air Force Fact Sheet. April 2003.

Statement of Significance

North Field (Site 66-07-1064) is significant for its association with Andersen AFB's role as an important strategic and logistical location for the Air Force during the Cold War. North Field was originally constructed to serve as an airfield for B-29 bombers as part of the strategic bombing campaign over Japan during World War II. After the war, the U.S. Air Force took control of the base and used it first as a bomber base for the Far East Air Force (FEAF) and then as the only Strategic Air Command (SAC) bomber base in the Pacific Rim. During the Vietnam Conflict, Andersen's runways supported major B-52 bomber operations against North Vietnam, including Operations ARC LIGHT, BULLET SHOT, and LINEBACKER I and II, a crucial portion of the American strategy during the war.

1) SAC – During the Cold War, Andersen AFB served as the only Pacific Rim deployment base for SAC's nuclear bomber force. During the early years of the Cold War, the US Air Force deployed its bomber force to forward bases so that they could reach their targets. The field at Andersen AFB served as the base for SAC B-50, B-36, B-47, and B-52 bombers during their alert deployment rotations.

2) Vietnam – During the Vietnam War, the airfield at Andersen served as the primary base for American strategic bombers that were used both against North Vietnamese targets and for interdiction of Communist forces.
    a. ARC LIGHT – From 1965 to 1970, Andersen AFB-based B-52 bombers flew ground support missions as part of the American war effort in Vietnam. The ARC LIGHT missions were crucial in the American air campaign, and were critical during ground missions, such as the lifting of the siege of the U.S. Marines at Khe Sanh in 1968.[118]
    b. BULLET SHOT – In spring of 1972, the Nixon Administration ordered the deployment of over one hundred B-52s to Andersen AFB to launch attacks on North Vietnam to punish the North for continued hostile actions and to persuade them back to the Paris Peace Talks.
    c. LINEBACKER I – In summer of 1972, Nixon ordered strategic bombing of North Vietnam's infrastructure, depots, and air defense network as a means to pressure the North during the Paris Peace Talks.
    d. LINEBACKER II – After the North Vietnamese left the Paris Peace Talks in winter of 1972, Nixon again ordered another round of bombing of targets in North Vietnam to again pressure them to return to the talks.

[118] Operation ARC Light, Fact Sheet, electronic resource, http://www.afhso.af.mil/topics/factsheets/factsheet.asp?id=15262, accessed November 30, 2011.

Part II. Structural/Design Information

A. General Statement:

1. **Character:** While retaining some of the elements from World War II, North Field has the character of an Air Force runway system from the second half of the twentieth century. North Field was originally designed for World War II-era propeller-driven B-29 bombers. As such, it had two parallel runways with three taxiways that paralleled the runways and five crossover taxiways. Along with the runways and taxiways, the airfield also had round-headed hardstands and parking aprons. Between Taxiways F and H is a distinctive dip in the runways that has existed since the construction of North Field in late 1944 and early 1945. With the advent of larger, heavier, and jet-driven bombers, the runways, taxiways, hardstands, and parking aprons were expanded. Only 30 of the 125 round-headed World War II-era hardstands remain today without having been altered with a square body or transformed into a rectangular hardstand (24 percent). During World War II, North Field was known for its black paving set against the white coral limestone base. Presently, the runways are stark white set against a sea of green grass.

2. **Condition of fabric:** Due to North Field being an active runway throughout its existence, most of the surface fabric and some of the base layer have been replaced. The present fabric is in good condition, but little to no surface fabric from World War II remains. While retaining some of the layout from World War II, North Field is essentially a Cold War-era airfield with the 1940s elements adapted for larger and heavier aircraft such as the B-36, the B-47, and the B-52.

B. Description

1. **Layout:** There are four basic runway configurations in the United States with more than twenty typical variations on these four. The four runway configurations are single runways, parallel runways, open-V runways, and intersecting runways.[119] North Field consists of two parallel aircraft runways (Runways 06R/24L and 06L/24R), ten taxiways (Taxiways A, B, C, D, E, F, G, H, J, and K), 125 hardstands (rectangular, square-bodied with round heads, and round-headed), and nine parking aprons (South Ramps 1, 2, 3, 5, 6, and 7, and North Ramps 1, 2, and 3). North Field is designed with parallel runways 1,788' apart from centerline to centerline. The runways lie in an east-northeast to west-southwest direction, but the runways were historically labeled "North Runway" and "South Runway" for quick reference. Three

[119] American Association of Airport Executives, *AAAE Accreditation and Certification Programs, Body of Knowledge Module 12, Airport Layout Plans*, electronic resource, http://www.aaae.org/training_professional_development/professional_development/accredited_airport_executive_program/program_study_materials/ACC%20Module12.pdf, accessed December 7, 2011.

taxiways parallel the runways, with Taxiway B to the south, Taxiway C in the middle, and Taxiway D to the north. Taxiways B and C run nearly the entire length of the runways, while Taxiway D is approximately 6,000' long, connecting Taxiways F and H. Six crossover taxiways exist, including Taxiways E, F, G, H, J, and K. Hardstands are located along Taxiways A, B, C, and D, while three parking aprons (or ramps) are located on the north side (North Ramps 1, 2, and 3) and six parking aprons are located on the south side (South Ramps 1, 2, 3, 5, 6, and 7).[120]

2. **Dimensions:** Runway 06L/24R (North Runway) is 10,555' long and Runway 06R/24L (South Runway) is 11,210' long, and both are 200' wide. Including overruns and displaced thresholds, Runway 06L/24R (North Runway) is more than 12,000' long, and Runway 06R/24L (South Runway) is more than 13,000' long. The taxiways are mostly 200' wide, with portions of Taxiway F approximately 400' wide and portions of Taxiway G only approximately 20' wide. North Field is 1,439 acres in size, as defined by the historic boundaries.[121]

3. **Materials and Condition:** When originally designed, North Field was made of a coral base with an asphaltic concrete overlay. Through the years of service, the surface of the runways, taxiways, and associated hardstands/parking aprons have been patched, repaired, overlaid, expanded, and replaced. The runways are in very good condition, having been replaced in the last five years. Presently, the runways are paved in Portland cement concrete, while the hardstand, parking aprons, and taxiways are covered in asphaltic concrete. Polymer cement concrete (PCC) was used in limited sections, particularly on the South Runway Extension and on present-day Taxiway E.[122]

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[120] Department of the Air Force, Directorate of Civil Engineering CDS/P&R-Washington, D.C., "Pacific Air Forces Comprehensive Plan, C-1 Tab, Installation Layout, Andersen Air Force Base, Guam, Marianas Islands" [2011]. On File, Andersen AFB, Guam.

[121] Department of the Air Force, Directorate of Civil Engineering CDS/P&R-Washington, D.C., "Pacific Air Forces Comprehensive Plan, C-1 Tab, Installation Layout, Andersen Air Force Base, Guam, Marianas Islands" [2011]. On File, Andersen AFB, Guam.

[122] Yoklavich and Tuggle, *Historic Building and Associated Landscape/Viewsheds Inventory and Evaluation for Andersen Air Force Base, Guam*, 14-18; Strategic Air Command, Andersen Air Force Base, Guam, M.I., "1979 Pavement Condition Survey, Construction History," Drawing No. PRO 153 [1980]. On File, Civil Engineering, Andersen AFB, Guam; "South runway reopened, ready for operations," May 18, 2010, electronic document, http://www.andersen.af.mil/news/story.asp?id=123205060, accessed December 7, 2011; "Runway completion brings operations changes, improvements," April 13, 2010, electronic document, http://www.andersen.af.mil/news/story.asp?id=123199637, accessed December 7, 2011; "North Runway Repair – Andersen Air Force Base, Guam," electronic document, http://www.amorient.com/index.php?option=com_content&view=article&id=57:north-runway-repair-andersen-air-force-base-guam&catid=38:portfolio&Itemid=64, accessed December 7, 2011; "Andersen runway reopens," June 18, 2007, electronic document, http://www.pacaf.af.mil/news/story.asp?id=123057556, accessed December 7, 2011.

C. Site information

North Field is located at the northern end of Guam on present-day Andersen AFB, near Pati Point. The northeast half of Andersen AFB is dominated by the aircraft runways, taxiways, hardstands, and associated flight-line facilities that constitute North Field. The runways are oriented on an east-northeast to west-southwest axis, with Runway 06L/24R located to the north and Runway 06R/24L located to the south. The majority of the buildings on the base are located to the south and southwest of the airfield.

Part III. Sources of Information

As part of the preparation of the HAER documentation of the runway at Andersen AFB, the historians conducted research at several archival repositories, collecting primary and secondary sources, to prepare the historic context. Research with informants and archives was done in Guam, Hawai'i, and Washington, D.C., for oral histories, maps, historic photographs, and other pertinent documents. SEARCH historians researched the following repositories:

- Micronesian Area Research Center, University of Guam
- National Park Service (Hagåtña, Guam)
- Trust Territory Archives Photograph Collection, University of Hawai'i
- Hamilton Library, University of Hawai'i
- Library of Congress, Washington, D.C.
- National Archives and Records Administration, Washington, D.C., and College Park, Maryland
- 36th Civil Engineering Squadron (CES), Andersen AFB, Guam
- 36th Wing History Office (HO), Andersen AFB, Guam
- Air Force Historical Research Agency (AFHRA), Maxwell AFB, Alabama
- The SEARCH library

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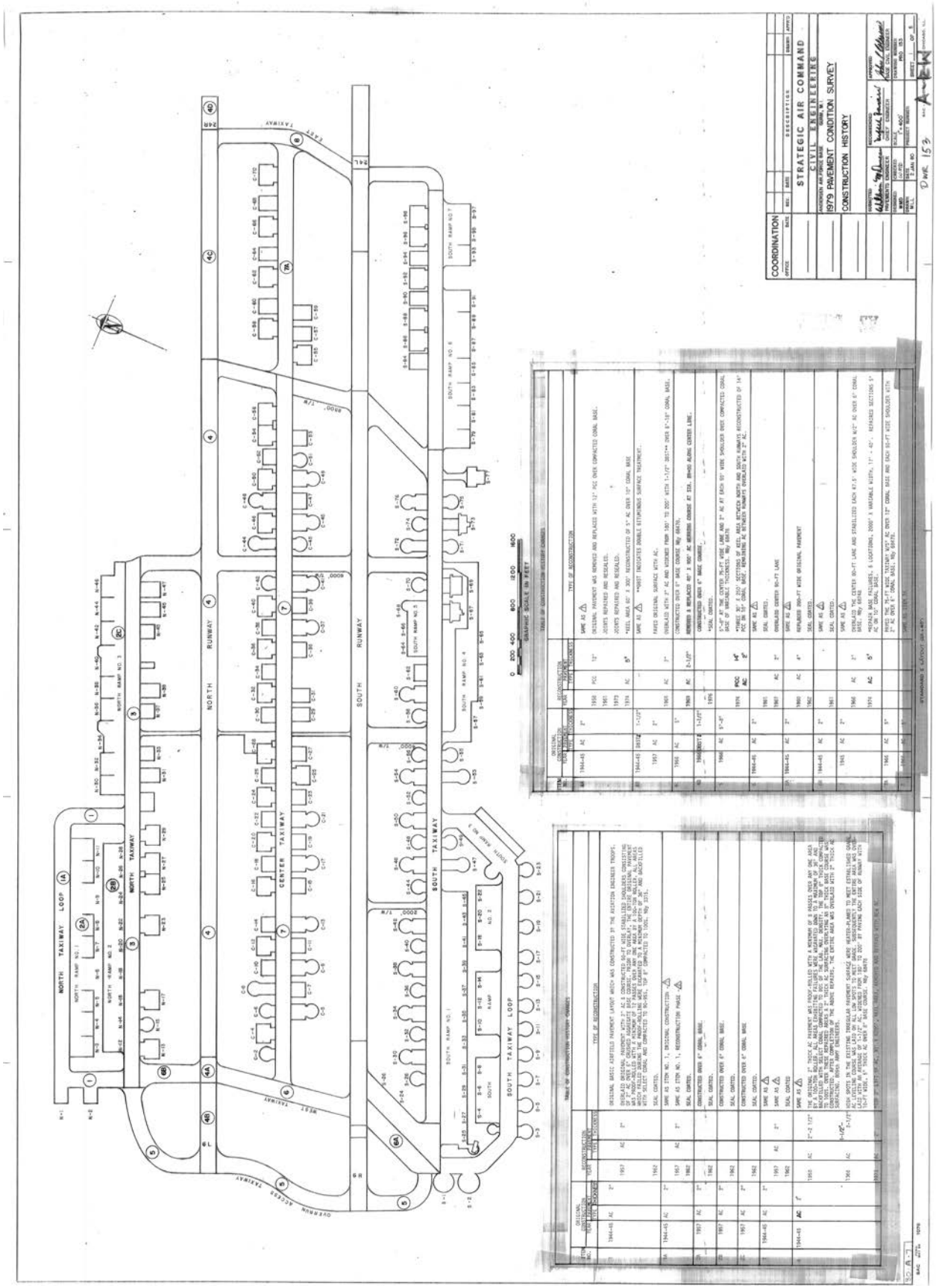
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