

## HISTORY OF JOHNSTON ATOLL

When first discovered, Johnston Atoll was very much like many other Pacific atolls. Its importance grew with the onset of World War II, continuing during atomic testing in the Pacific. The Logistical Planning Group of Holmes and Narver, Inc. (H&N) wrote a two-part historical account of Johnston Island. The first part, based on a historical account of Johnston Island between 1796 to 1964, was written in 1965 by Lieutenant Commander Lawrence Richard Bauer, United States Navy (USN). Holmes and Narver wrote the second part of the report, providing an account of the history of the island from 1965 to 1973. This two-part history provides an accurate, concise, and comprehensive account of Johnston Island. The H&N report appears as indented paragraphs, which clarify the history. The original H&N text is placed in brackets. Along with the complete H&N report are major insertions from current historical research. Since original H&N references were in the form of endnotes, they remain in the same format in this report. Additional research references are cited following the endnotes. This Appendix also provides an overview of the history from 1973 to June 15, 2004, the date the Air Force mission at Johnston Atoll was terminated and Atoll closure complete.

### B.1 HISTORY: 1796–1964

Lack of evidence of early habitation leads to the conclusion that there was little human activity on the island until the early 1900s. Theories regarding early discovery suggest that the Spanish explored Johnston Island. A Spanish map by Godallett indicates that their maps identified a small island, which could have been Johnston Island. However, there is no solid historical evidence for Spanish exploration or settlement.

The Spanish sailed Central Pacific waters for two and a half centuries before any sightings of Johnston Atoll are known to have been recorded. Annual trips in the trade winds from Acapulco to Manila took them less than 200 miles south of the Atoll. The return route, in the prevailing westerlies, took them north, not only of Johnston but of the entire Hawaiian Archipelago. Dahlgren (1916) and Stokes (1939) thoroughly explored the possibility of Spanish discovery of the Hawaiian Archipelago, a myth that grew and spread from several sources, but is negated by both these authors (Amerson et al. 1976).

Other scattered references characterize potential discoverers of Johnston Island. The H&N report begins here with examples of the first known identification of the island in 1796, a suspected encounter in 1804, and the landing that resulted in the naming of the island in 1807.

[On September 2, 1796, the American Brig SALLY, of Boston grounded on a shoal some 717 nautical miles WSW of Honolulu. At that time her skipper, Joseph Pierpont, saw a rough circular reef some eight miles across. In it lay a guano-covered patch of sand 1000 yards long and about 200 yards wide, reaching mountainous height of some forty-four feet at its northern end. About a mile and a quarter to the northeast was a smaller patch of sand about 200 yards in diameter with its highest point some eight feet above the coral studded reef. He was apparently so little impressed that he logged it and got away as quickly as possible.<sup>1</sup>

The celebrated navigator Krusenstern suspected Johnston Island's existence as evidenced by his writings. "On the 15th of June<sup>2</sup>, we saw in lat 17° and long 160°30 an extraordinary number of birds that hovered round the ship in flocks of upwards of a hundred; this raised our hopes of meeting with land very considerably; but although the night was perfectly clear and we kept a good lookout, there was none to be perceived. I cannot; however, but think, that during the night, we must have passed near some island or rock, standing above water, that serves as a resting place for these birds, for we again saw several the next morning, nor did we lose sight of them until noon.<sup>3</sup>

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<sup>1</sup> Manuscript, Wetmore 1923

<sup>2</sup> 1805

<sup>3</sup> *Voyage Around the World*, Krusenstern p. 201.

Not three years later on December 14, 1807, the islands were discovered by Captain Charles James Johnston, of the HBMS CORNWALLIS.

The discovery and place of the group was announced by Lieutenant William Henry Smith, an officer on board the CORNWALLIS; hence, the group was sometimes called by the name of the frigate. The original observation placed them at Lat 16° 53' 20" N, Long 169° 31' 30" W.

The description of Johnston Atoll Island in the log of CORNWALLIS was brief: "Two very low islands having a dangerous reef to the eastward of them, and the whole not exceeding four miles in extent."<sup>4</sup>

The islands were described by Commodore Wilkes in 1840<sup>5</sup> as a "lagoon surrounded by an extensive reef, extending northeast and southwest ten miles and five miles broad; on the northwest side are two islets; the westernmost in Lat 16° 48' N Long 169° 45' 36" W is covered with bushes but no trees; the other sand bank."<sup>6</sup>]

The lack of early resources leaves the early 1800 period of Johnston Island with breaches in a continuous history. However, the following excerpt from Amerson et al. (1976) combines sources and provides a glimpse into the age of discovery of Johnston Island. The first citation elaborates on the early Pierpont sighting and the subsequent landing and discovery of the island.

The discovery of Johnston is usually attributed to the HMS CORNWALLIS, Captain Charles James Johnston, on December 14, 1807. At least one account of the island, by Captain Joseph Pierpont of the SALLY, out of Boston, predated the CORNWALLIS sighting by 11 years, and Krusenstern (1811) declared that the Spaniard Don Jose Comisares' sighting is poorly documented, but the 1796 grounding of the SALLY and the Prince William Henry was reported in several newspapers and is here regarded as the earliest account of the Atoll on record.

Captain Joseph Pierpont of the SALLY published the following note in several newspapers, including the Columbian Centinel of Boston on June 24, 1797, and September 13, 1797. It is here copied from Ward (1967:417);

'In lat. 16,45 N. long. 169,38 W. from London, on my passage from the Sandwich Islands to China; the 2d of Sept. 1796, at midnight, in company with the schooner Prince William Henry, William Wake, Master, of London, we both ran ashore on the south side of a reef of coral rocks and sand, where we continued until next day noon -- at which time the weather being very clear. We saw two small islands of sand, bearing W. by N. 4 or 5 miles distant, and from our topgallant-mast-head. We saw the shoal extending W.W. W. southerly round to W.S.W., but how far we were not able to determine.

Keep the Lat. 17 N. and this shoal will not be seen.

Joseph Pierpont

N.B. "It is hoped that the printers of America, will give the above a place in their papers."

Krusenstern himself (1811: 288) suspected the presence of land in the vicinity of Johnston Atoll in 1804:

'On the 15th of June we saw in lat. 17 degree and long 169 degree 30', an extraordinary number birds that hovered round the ship in flocks upwards of a hundred: this raised our hope of meeting with land very considerably: but although the night was perfectly clear and we kept a good lookout, there was

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<sup>4</sup> *Marshall's Royal Navy Biography, Vol. IX.* p. 173.

<sup>5</sup> *U.S. Naval Expedition 1834-43*

<sup>6</sup> *Report of Secretary of the Navy 1859-60* p. 1173.

none to be perceived. I cannot, however, but think, that during the night, we must have passed near some island or rock, standing above water, that serves as a resting place for these birds, for we again saw several the next morning, nor did we lose sight of them until noon.' . . .

Otto von Kotzebue (1821: 258-259), another Russian explorer, described the islands, but it is doubtful if he actually saw them:

The islands which Mr. Johnston [sic] discovered in 1807, on board the frigate CORNWALLIS, in the W.S.W. of the Sandwich Islands, and which we looked for in the spring of 1817, are, like the island of Sala y Gomez, perfectly naked rocks which do not seem to belong to the formation of low islands. The reefs which are united to them form shoals extending to great distances from them, which are very dangerous to vessels that navigate these seas.

No further sightings of the islands are known between the possible Kotzebue sightings of 1817 and that of one of the ships of the Wilkes Expedition in 1841 (Wilkes, 1844, 5: 288);

"Mr. Knox [S. R. Knox, Acting Master of the U.S. SCHOONER FLYING FISH] reported to me that after his separation, on the 30th of November [1841], he stood for the position of Cornwallis Island, as laid down by Arrowsmith in longitude 169 degree 31' w, latitude 16 degree 50' n., without seeing any indication of land. Twenty-two miles to the south-by-east of this position, he discovered a reef, which surrounded an extensive lagoon, extending north-east and southeast ten miles, and in the opposite direction five miles. On the northwest side of this reef there are two low islets: the one to the westward was covered with bushes, but not trees; the other was no more than a sand bank. This reef lies deep. The longitude of the westernmost islet was found to be 169 degree 45'36"W., and the latitude 16 degree 48'N." . . .

The next known possible sighting of the island was by William H. Parker, captain of the REINDEER, who passed through the area in January 1852 on a trading voyage to the Ladrone Islands and China, and later claimed to have seen several islands at Johnston Atoll. What he actually saw is difficult to determine, because his descriptions fit nothing actually present. It is possible he saw nothing, but knowing islands had been described in the areas, made up a good sounding story (Amerson et al. 1976).

[From time to time a few commercial ships reported the shoal which was considered more as a menace to navigation than anything of value.

In 1856, the U.S. Guano Act was passed. This law enabled a citizen to take over an uninhabited and unclaimed guano-laden island under the protection of the American Flag upon the fulfillment of certain development and habitation conditions.

Upon hearing of the Act, two enterprising Americans, Park and Ryan, formed a partnership and petitioned the government for letters of patent, granting to them Johnston Island. Because the partnership could not finance the venture, their petition was refused. However, they went in search of assistance and with some difficulty were able to obtain a working agreement with Messrs. Byxbee and Stoddard, owners of the schooner PALESTINE. This agreement was to the effect that PALESTINE would proceed to the islands, land upon, and examine them; and, if guano was found, possession of them would be taken in accordance with the Act of March 1856. The agreement also stipulated that Parker and Ryan would receive three-eighths interest, the remainder going to Byxbee and Stoddard for taking upon themselves all of the risk and expense of the expedition.<sup>7</sup>

Arriving at Johnston on March 19, 1858, the Captain of PALESTINE found a large amount of guano; however, there was no wood, water, or agricultural soil. In spite of this, an American flag was planted on both

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<sup>7</sup> Report of Secretary of the Navy 1859-60 p. 1173

islands and crosses were erected bearing the inscription that the entire place was claimed for the United States and the owners and charters of the schooner.<sup>8]</sup>

According to Amerson et al. (1976), sworn and notarized statements, which provided an accounting of the events at this time provided several versions of the procedures that actually occurred on the island. It is certain though that it was during this landing that the American flag was resurrected and what would later be know as Sand Island was named “Agnes” Island after Parker’s daughter. In the next several months there was a contention for the rights to the island, probably as a result of the potentially lucrative guano business.

[Meanwhile, another group of enterprising San Franciscans under the leadership of Samuel C. Allen, decided that they too might be able to realize a tidy profit as a result of possessing the island. Approaching the problem from a different angle, they persuaded King Kamehameha IV to claim the islands as part of Hawaii. Three months following the PALESTINE’s voyage, from June 14-19, 1858, the Hawaiian schooner KALAMA, commanded by a Captain Watson and with Allen aboard, visited Johnston Island, removed the American flag and hoisted that of Hawaii. The larger island was named Kalama and the smaller Cornwallis.

Returning on July 22, 1858, the captain of the PALESTINE again hoisted the American flag and reasserted the rights of the United States. This time he left two of his crew on the island to gather guano. On July 27, 1858, while these two men were still on the island, a proclamation of Kamehameha IV declared the annexation of this island to Hawaii, the Attorney General of Hawaii stated it was “derelict and abandoned.”<sup>9]</sup>

The records indicate that the struggle for the rights to Johnston Island were constant and appeared to rely largely upon what ship happened to be there and was able to remove the guano. Below, Amerson et al. (1976) gives an example of the contentious claim of the island. In this excerpt two ships land at the island at the same time.

A confrontation did occur, however, for Allen sent Captain Borland in the ship GAUNTLET to the island for a load of guano. On arrival, he found the two Pacific Guano company men in possession of the island and told them he intended to load the GAUNTLET, using force, if necessary. The Pacific Guano Company had in the meantime sent A.D. Piper in the ship RADIANT, under Captain Hallet, to take command of the island and to prepare for shipping guano. The GAUNTLET was at anchor when Piper arrived and he immediately protested its presence to Borland, but offered to sell him a load of guano at \$4.00 per ton, or to charter his ship for his own firm--the Pacific Guano Company. Borland apparently was more intimidated by the difficulties in loading from the islands than by threats or deals, so he accepted neither offer. Captain Hallett concurred that loading was impossible, and refused to load the RADIANT. Both Borland and Hallett then left the island, leaving Piper and 11 men in armed possession of the island. Piper set his men to work preparing a wharf, railway, etc., for shipping guano. The FENIMORE COOPER, under Captain John Brooke, was ordered to the island in March 1859, to survey the islands and make soundings. He arrived 14 March and learned the above story from Piper (Brooke, ms: see also, :Brooke 1955).

[The extensive reef which surrounded the island posed a hazard which sea captains did not wish to chance with loaded vessels. Until a suitable passage was provided by Mr. A. D. Piper, superintendent for the original parties, in cooperation with LCDR John M. Brooke, USN<sup>10</sup>, there was little profit from the operation. However, with the completion of the channel a considerable amount of guano was depleted, the islands were again deserted.]

It is difficult to determine exact amounts of guano that were taken from the islands prior to its desertion but records indicate that it appears to have been substantial.

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<sup>8</sup> Congressional Bulletin Number 1025

<sup>9</sup> American Polynesia and the Hawaiian Chain, Bryan

<sup>10</sup> Commanding Officer, U.S. Schooner FENIMORE COOPER dispatched to protect American interests.

The amount of guano being taken off during 1859 and subsequent years must have been fairly substantial, if the number of ships and the statements of their captains can be trusted. There is, however, some question as to the value of the product shipped. It was reputed by at least two ship captains to be of high quality, easily obtained, etc., but Hague, in 1862, wrote that: "...Johnston Islands one or two cargoes have been brought to this country [the United States], the greater part of which proved, I believe, to be sand. These are described as three small islands, probably islets of one atoll containing but little guano and that mixed with coral sand.' Whether the companies continued on in contention is not know, but they probably did, for ships of the American Guano Company were reported in and out of Honolulu to and from Johnston Island in 1860 and 1861 (Amerson et al. 1976).

The halt to guano removal is often contributed to the lack of substantial amounts of guano remaining to be taken. However, other factors were most likely involved. Perhaps, as previously mentioned, the guano was, in fact, not of substantial quality. Regardless, it is certain that the Civil War "created an interruption in both guano exploitation and in attempts to pursue claims" (Amerson et al. 1976). After the war, there was again a minimal increase in interest paid to Johnston Island.

[In 1872 Parker's widow sued for title to the island based upon her husband's development work. The United States Attorney General denied the claim on the grounds that Parker had sold interest several years before, and that the island had been voluntarily abandoned since that time.<sup>11</sup>]

Apparently there was quite a struggle for the rights to Johnston Island by the three Parker heirs. The first - heir was Mr. Parker's widow, Harriet B. Parker, and the second, their daughter, for which Sand Island was named, Agnes Parker Burtt. Their son, William H. Parker, Jr., died of wounds suffered as a member of the Union Army. Amerson et al. (1976) described the lengths to which Mrs. Parker went in her endeavor to acquire the rights to the island.

Parker's supposed widow, Harriet B. Parker, pursued his claim to the islands, but a judicial ruling from Jeremiah Black, later in 1859, stated that since Parker had not actually occupied the islands, and the Pacific Guano Company had, the company was the proper possessor of the islands... In 1859 attorneys for Parker's heirs and for the Pacific Guano Company wrote several letters to the Secretary of State and to President Buchanan attempting to verify their claims...

In 1872, Parker's widow was successful in getting Congress to amend the Guano Act to allow legal heirs to claim islands of deceased original claimants. She had no success, as far as is known, in obtaining clear title to the islands, or any compensation for whatever guano was removed. Their principal claims were that a document awarding the islands to the Pacific Guano Company bore the forged signature of Secretary of State Cass; that Parker was acting alone in claiming the islands; that he had not sold stock in the Pacific Guano Company; and that Perriman and Rich made statements in October which conflicted with those made in May in order to help the Company beat Parker out of his claim.

About 1879, a third heir appeared. Mrs. Malvina H. Parker, of San Francisco, who claimed to have been married to W. H. Parker July 16, 1858 in San Francisco, and furnished proof in the form of sworn statements by the Justice of the Peace who performed the ceremony. She, together with Agnes Parker Burtt, disclaimed the assertions by Harriet B. Parker, whom they now referred to as Harriet B. Fisher, of her rights to the guano island claims. Apparently Parker had divorced Harriet B. Parker sometime before 1858.

After the war it took some time in order for movement on the island to increase. There is little record of this early activity and only some mention of a few passing ships and one wrecked ship near Johnston Island. "Ships known to stop at Johnston Island after the Civil War were few. Presumably most of these stopped for guano, but as far as is known, there was no permanent, continuous occupancy during this time" (Amerson et

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<sup>11</sup>U.S. Naval Institute Proceedings, Volume 69 p. 1178.

al. 1976). Two other ships are known to have taken very brief looks at Johnston Island. “The U.S.S. FENIMORE COOPER, under command of Lieutenant J. M. Brooks, paid a visit in 1859. The NETTIE MERRILL, under Captain Cluney, sailed to the island from Honolulu, June 1, 1869, to investigate the guano deposits, returning on June 24, 1869. Occasionally, other vessels stopped to load guano” (Bryan 1942a). The only other activity recorded at this time was that of a shipwreck.

The only major shipwreck known to have occurred on the Atoll happened in 1889. This is remarkable in view of the difficulty in seeing the island, and the number of whalers, guano ships, etc., plying these waters throughout the 18th and 19th centuries. The whaler J. B. HOWLAND wrecked on the island December 26, 1889. One or two men were lost in getting the men ashore over the coral heads of the lagoon. All survivors were subsequently picked up and returned to Hawaii (Amerson et al. 1976).

[In 1892 Britain was going forward with cable plans for the Pacific and Johnston Island appeared to be a good way-point. As a consequence, the corvette CHAMPION came, made a brief stop, and left an annexation notice atop the highest dune.<sup>12</sup> Negotiations with the Hawaiian government followed, but were aborted when it was decided to run the cable via Fanning Island. Consequently, both principals lost interest in Johnston Island.]

The records indicate at this point that Johnston Island was listed under the State Department as bonded to the U.S. through the year 1893. The contest for claim to Johnston Island continued on into the closing years of the 1800s. Once again a Parker heir made attempts to control some of the profits from the island. Parker’s daughter, Agnes Parker Burt York, made agreements with men that held interest in the island with the result that she visited the island in 1905 and returned with a small amount of guano. Records indicate that the island changed hands, at least on paper several times in the coming year. However, no records indicate that this line of interest carried out further ships to or from the island after this one prior voyage that included Agnes (Amerson 1976). However, this did not signal an end to the contest for Johnston Island. After a few quiet years of little interest in Johnston Island, it was Hawaii that continued on with the challenge.

[Little or no attention was paid to the islands during the ensuing years until Hawaii became an integral part of the United States in 1898. At this time, Hawaii still maintained the desolate spot was rightfully hers and on September 11, 1909, the territorial government went so far as to lease it for fifteen years to a private citizen, Max Schlemmen of Honolulu. The annual rent was \$25.00 and the lease in part was as follows: “The lessee to plant on the premises five hundred coconut trees per annum and maintain same in good condition during the term of the lease. And it is further agreed and understood between the parties hereto, that the Lessee will not allow the destruction of birds on or the capturing of birds for removal from said Johnston Island from the water immediately adjacent thereto.”

This venture was a short-lived one. Bryan wrote in June of 1937, “A board shed was built on the southeast side of the larger island, and a small tramline constructed onto the slope of the low hill, to facilitate the gathering of guano. Apparently, however, neither the price of guano or its quantity and quality on the island was propitious, nor was the distance to haul fish to the market, as the project was soon abandoned.”]

[On August 8, 1917, Edward M. May presented an affidavit to the Commissioner of Public Lands to the effect that during June 1914, in company with Captain George Pliltz, he visited what is known as Johnston alias Cornwallis Island, and was on the island for one day and viewed the entire landscape. He found the island to be a reef with two islets. The island was uninhabited and unimproved, and with only slight vegetation, which consisted of grass, and some bushes, similar to those along the shore of the island of Oahu. There were no coconut trees on the island whatsoever, nor any signs of any such trees or the cultivation thereof. On August 9, 1917, H.E. Strafford petitioned the Commissioner of Public Lands to terminate the lease because the lessee had not planted the coconut trees and had not paid the taxes on the island as required by the lease. On August 23, 1917, the Commissioner of Public Lands wrote to Max Schlemmer: “My attention having been called to the fact that you have not complied with the terms of your lease No. 661 of Johnston Island, I beg to notify

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<sup>12</sup>At various times dunes were reported at 150 feet.

you that unless the terms of said lease are complied with before September 1, 1918, said lease will be terminated.”

On August 9, 1918, the lease was assigned to C.K. Ai of Honolulu, Hawaii, with the consent of the Commissioner of Public Lands, “provided, however, that such consent shall in no wise be construed as varying in any respect the liabilities and obligations to the Territory, under said General Lease No. 661, of the above named C.K. Ai.” The consideration of assignment was \$375.00. C.K. Ai and Company, a Japanese firm in Honolulu, planned to establish a fishing station on Johnston, and for this purpose dispatched a sampan with a party of Chinese and suitable equipment. These men landed, built a crude shack, but after a day and a half are reported to have mutinied, and returned to Honolulu.]

In 1923, Johnston Island entered into its next stage of existence. The priority was to study and protect the main inhabitants on the island, the birds, versus exploiting them and their guano. This period began with a scientific expedition that was a foretoken of cultural changes occurring in that era based upon a new understanding and interest in scientific reasoning.

[Under arrangements made by the Biological Survey, U.S. Department of Agriculture and the Bernice Bishop Museum of Honolulu with the USN, a visit to Johnston Island was included in the itinerary of the scientific survey of the Hawaiian Bird Reservation in 1923. On July 10, 1923, the survey party under the direction of Alexander Wetmore located a camp on the southwest point of Johnston Island. In addition to his scientific work conducted at this time, Dr. Wetmore, at the request of the Territorial Commissioner of Lands, made a report to the latter on fulfillment of the stipulations in the original lease as to plantings and other agreements. He wrote on his return that he had found no sign of tree planting or other occupation except for the above mentioned shacks established by the C.K. Ai and Company.]

One of the greatest proponents of the early history of Johnston Island was Mr. Edwin H. Bryan, Jr. An eclectic, he eventually was titled ‘Curator Emeritus’ for the Bishop Museum of Hawaii. In 1923, he was a member of the scientific expedition voyage that visited Johnston Island. Today his papers are on file at the Bishop Museum and remain the most vital source of historic information on Johnston Island. Bryan published a book titled, *American Polynesia and the Hawaiian Chain*. The book was published on June 25, 1941. Originally, the text was printed as forty-five weekly installments appearing in the Honolulu Advertiser between September 11, 1939 and July 15, 1940. These articles and subsequent articles he authored for the periodical, *Paradise of the Pacific*, provide much of the history used today regarding Johnston Island. In his book, *American Polynesia and the Hawaiian Chain*, Bryan briefly writes of the epic scientific voyage of 1923. He begins by telling of other members on board the trip.

In the party were also Commander John Rodgers (famous for his seaplane flight from California to Hawaii) and two other aviators who made a pioneer flight over Johnston, photographing it from the air. Tents were pitched on the southwest beach of fine white sand, and a rather thorough biological survey was made of the island. Hundreds of sea birds, of a dozen kinds, were the principal inhabitants, together with lizards, insects, and hermit crabs. The reefs and shallow water abounded with fish and other marine life . . . The shore is alternately white sand and rough, jagged coral reef. . .

Accounts of the biological survey were published in the Bishop Museum publications. A letter from G.V. Stewart, Commander, Mine Squadron Two, written to the Chief of Naval Operation describes a portion of what occurred on the island during the expedition.

On the 7th [correct dates are July 10th to July 20th] work began in setting up signals on the islands for surveying the lagoon, which was done from 10 through 20 June. Accurate position determinants were made, currents were studied, a tide gauge was operated, and extensive soundings were made throughout the lagoon. Although there was no record of any scientific personnel on board, collections of coral, marine growth, land shells, etc., were made for use of the Atoll for seaplanes, as it was thought that seaplane runways could be developed easily by blasting coral heads. The signals erected on the island were removed so subsequent visitors, notably the Japanese, would not know the survey

had been made. The expedition left the Atoll 22 June and arrived back at Pearl Harbor on the 26th (Amerson 1976).

Another leader of the expedition, Dr. Wetmore, wrote a daily diary during his stay on the island. The majority of the diary is a scientific description of the terrain and the enormous number of birds encountered and studied by the team. Other entries are more personal, which indicated the time of their flight and the coarseness of the island. Dr. Wetmore writes upon landing on Johnston Island Tuesday, July 10, 1923:

“The soil inland was badly cut by shearwater holes so that I located camp on the highest part of the only available stretch of beach . . . Through some oversight, tent pegs were omitted, though I had asked for them, the first of a series of mishaps that marked the making of this camp... The tent pegs arrived . . . [then] we discovered then that kerosene had been overlooked! . . . A crude hut with a cast iron roof has been erected on the shore south of the eastern hill. Lumber and some barrels lie scattered about, said to have been brought here by Ai[?] a Chinaman from Honolulu who intended to establish a fishing station here. His crew revolted, however, after landing the supplies, and the project was abandoned. In a slight hollow below the western side of the hill I found remains of a much older hut erected by a white man who lived here at one time. On the summit of the hill is a head board that may mark a grave.”

Wetmore’s next entries, beginning with this one dated Friday July 13th, are further illustrative of the sense of Johnston Island for early ocean travelers. Also, the July 17th entry greatly differs from the scientific jargon and descriptions of the majority of the diary, allowing for an individual glance at the actuality of the island.

July 13th, Friday: “The flattened sand louse . . . is very abundant here and is a decided nuisance, as at night it invades our cots, crawls all over us and sucks our blood . . . The creatures crawl out of the sand and do not make an appearance until I have been asleep for an hour or so. I awake then and with the light of an electric torch kill 30 or 40 . . .”

July 17: [Describing a late night bird search:] “A quarter moon shed a dim light. . . Shearwaters dodged between my feet, noddies rose in my face and dim ghostly forms of frigatebirds hung in the air overhead, silent companions of vulturian sinister aspect from whose inspecting one is never free. As I walked along I meditated on strange happenings that may have taken place on this remote bit of land. On the strange birds that may have colonized it during the distant past when it covered a much larger surface, of their life and loves and deaths, of possible visits by savage men, Polynesians driven from their course in journeys from Hawaii to the south or in return from southern wanderings, men perchance who landed here to rest, fish and recuperate for days or weeks and then continued northward guided by constellations in the sky, or others of white skins drifted here from lost ships who, less skilled in wresting a livelihood from an arid land, perchance died of thirst in some obscure hollow where they were covered by drifting sands, of poachers who with murderess hands destroyed thousands of the bird inhabitants for the sake of their wings. The air seemed filled with ghostly whispers of these ancient happenings and with a creeping along my spine I was almost prepared to visualize some of the scenes conjured so vividly by my imagination.”

On the next day, July 18th, Wetmore spent his last day on Johnston Island packing collections, working on notes, and also planting eight cuttings of *Hau Hibiscus tiliaceus* near their camp. It was one of many failed attempts at changing the ghostliness of the island through an increase in vegetation. Regardless of the failed endeavor at enhanced vegetation, the main intent of the expedition was a success.

[On July 29, 1926, as a result of a memorandum submitted by Dr. Wetmore, Executive Order No. 4467 placed Johnston Island under the control and jurisdiction of the Department of Agriculture as a breeding ground and refuge for the native birds which flocked there.<sup>13</sup>]

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<sup>13</sup> Manuscript, Wetmore 1923



Coolidge's order placed the island under the "Department of Agriculture as a 'refuge and breeding ground for native birds' . . . the Department of Agriculture had no ships, and the navy was also interested for strategic reasons, so another Executive Order, December 29, 1934, by President Franklin D. Roosevelt, placed the island under the 'control and jurisdiction of the Secretary of the Navy for administrative purposes,' but subject to use as a refuge and breeding ground for native birds, under the Department of Agriculture. The 14th naval District, Pearl Harbor, has immediate charge" (Bryan 1942b). As a predication of what was to come in the world and how it would affect the quiet little island, Bryan quite accurately predicted in 1937 that, 'the future probably would carry their (Johnston and Agnes) names more prominently than the past'.

[Virtually no serious thought was given to the place with respect to Hawaii's defense until the Japanese aggression in that part of the Pacific made such calculations imperative. So, on December 29, 1934, the President, by Executive Order No. 6935, placed it under the Navy Department and the following year it was included in our naval maneuvers.

From 1934 to 1939 rather infrequent visits were made to Johnston Island by the Pacific Fleet units;]

Bryan cites two such examples and the inevitability of these actions for the future of Johnston Island:

Several seaplanes have made flights from Hawaii to Johnston, such as that of a squadron of six planes in November, 1935. One of the most spectacular of these was on April 8, 1937, when two VP-6's made the round trip in ten and a half hours, to bring back a sick seaman.

Now the island is undergoing profound changes. A large appropriation has been made for the development of the spot as a seaplane base, and work there is underway" (Bryan 1942b).

The changes that occurred during the 1930s began an era in Johnston Island's history with events that would alter Johnston Island's history for all of time. Amerson et al. (1976) describes the events that led up to the transformation of Johnston Island into a vital airfield of World War II.

No further military activity occurred on the Atoll until 1933, when Johnston was included in an exercise in extended reconnaissance flights by Navy patrol planes. Data obtained from the 1924 survey were to be rechecked " . . . with view to actually determining the practicability of utilizing Johnston Island as a temporary aircraft base" (U.S. Nat. Archives, R.G. 45, Chief of Naval Operations of Commander in Chief, U.S. Fleet, 26 January 1933).

The USS PELICAN left Pearl Harbor April 17, 1933 and arrived off Johnston April 20, 1933. A small boat attempted to enter the lagoon through a reef blasted through the reef west of Johnston Island by the 1924 expedition, but was unsuccessful because of high surf. Entry was made around the southwest end of the reef, and landing and mooring areas for seaplanes were searched for in vain in the west and northwest parts of the lagoon. On April 21, 1933, a desperate attempt was made to find suitable mooring areas, and finally the area between Johnston and Sand Islands was picked and a message sent out to that effect.

Meanwhile, a squadron of seaplanes had left Hawaii and flown to French Frigate Shoals, following a line of ships spaced at intervals along the route. After the planes arrived at French Frigate Shoals, the ships realigned themselves between there and Johnston Atoll, and on April 22, 1933, four planes left for Johnston, arriving at noon. The only adverse incident was the striking of a large bird by one of the planes as it landed. The damage was repaired successfully on the island. All planes were fueled and serviced and departed for French Frigate Shoals on the morning of April 25, 1933.

A general description was made, including the information that there was no vegetation except for "long grass." Apparently the trees planted in 1924 did not survive. Johnston Island was considered long enough for landing small planes, with considerable grading necessary beforehand. The presence of a large numbers of birds on both islands and the islands being riddled with holes made by the birds were considered major hazards to aircraft operations, especially if landplanes were to be used. It was

concluded that the Atoll offered “. . . only fair possibilities for making a good advanced base” (U.S. Nat. Archives, R.G. 45, letter, Lt. F.M. Hughes, USN, to Commander, Aircraft Squadrons and attending craft, Fleet Air Base, Pearl Harbor, T.H.). Several photographs were made during this operation, and these are on file in the National Archives.

On December 18, 1934, the Atoll was visited by the Coast Guard ship ITASCA in a vain search for the lost aircraft STAR OF AUSTRALIA. Both islands were briefly explored by Captain C.T.P. Ulm and two companions and described very generally by Jan Jabulka (1934), a reporter on board the ship.

Because of the Atoll’s strategic military location, President Franklin D. Roosevelt, on December 29, 1934, by Executive Order No. 6935, placed the Atoll under the Department of the Navy. Provision was made within the new Order to keep Executive Order No. 4467, thus protecting the breeding birds and habitat.

The ITASCA again visited the Atoll on June 23, 1935 and September 23, 1935. The general description of the islands noted that an old guano shed was present, but lying flat, and that narrow gauge railroad wheels were still present. On November 12, 1935, a squadron of six Navy planes flew to the islands from French Frigate Shoals and they returned on November 13, 1935.

In 1936, the Navy began developing the Atoll. By October 19, 1936, a 210-foot pier had been built out from the south side of Sand Island and a sinuous, narrow boat channel had been opened through the reefs from the south into the seaplane landing area northwest of Sand Island. Reports indicate that a reconnaissance flight to the Atoll had occurred earlier in the year by VP Squadron Ten. First blasting operations were carried out by the advance party, and in October the USS WRIGHT arrived with more explosives (U.S. Nat. Archives, R.G. 45, letters of 15 October and 23 November 1936, from Commander K. Whiting, Aircraft Squadrons and attending craft, Fleet Air Base, Pearl Harbor, T.H., to Hydrographer).

The PELICAN and TANAGER arrived on March 30, 1937, and the SWAN on March 31, 1937, all carrying explosives for enlarging the channel. As a result of this last effort, the area for seaplane landing and mooring was about doubled and 24 planes could be accommodated. Blasting was also done around the pier. Recommendations were made for further improvements to allow tenders to get closer to the anchorage area of the planes. A map of the lagoon, dated April 14, 1937, showed a straight boat channel from the south side of the lagoon into the seaplane landing area, and on Sand Island a mess hall was marked at the northwest side of the base of the pier, and on the southeast side of a signal tower (U.S. Nat. Archives, R.G. 45, letter from Lt. Commander J.L. Cotton, USN, Johnston Island Expedition, to Commander, Minecraft, Battle Force).

In late 1939, the Navy awarded a contract for construction of a small base and in October or November a force of 60 men were sent to the Atoll to begin work on \$1,150,000.00 warplane, minecraft, and submarine base for the U.S. Navy, to be completed in a year (Anon 1939). At first a lagoon seaplane landing area with headquarters on Sand Island was built. But this tiny islet soon was overcrowded, and expansion in 1940 was made to Johnston Island itself.

Many viewed the attack on Pearl Harbor as a complete surprise. However, the construction at Johnston Island prior to the bombing was done in anticipation of this very kind of action. In this preparational building, natural factors of Johnston Island posed enormous construction problems. After the bombing of Pearl Harbor, the construction took on a more urgent priority of necessity and the building problems that went with construction on this type of an isolated coral island escalated as well. David O. Woodbury wrote details of these travails on Johnston Island in his 1946 book titled *Builders for Battle*. The following are excerpts from his writing about Pacific islands, and Johnston Island in particular, prior to and during the World War II construction era.

At Johnston, eight hundred miles southwest of Pearl Harbor, they found...the contractor’s superintendent enlarging the little coral sandpit under the hot skies to ten times its original size,

building barracks runways, recreation centers, hospitals . . . On seven islands spread over seven thousand miles of threatened ocean, these key men and hundreds of others like them were busy proving that American hands and tools could lick the problems of distance and isolation and provide the Navy with the take-offs for Tokyo that had suddenly become so necessary . . .

[A Congressional] board wound up with a punch-a priority list showing what must be done at once. Air bases headed the list: Kaneohe Bay, Midway, Wake, Guam, Johnston, and Palmyra: Kodiak, Sitka, and San Juan- without these the United States would be helpless . . . In March of 1939, a Senate Committee agreed to accept an amendment on the floor restoring Johnston and Palmyra . . . Wake was definitely out. It was too close to the danger zone . . . On May 25, 1939, the appropriation bill was finally passed by the House. It provided sixty-three million dollars for new naval aviation bases for national defense.

Toward the end of September 1939, Bert McMenimen and Ed Brier flew to Johnston by Navy bomber for a quick look around. A Hawaiian dredging engineer, Ernie Gray, went along to examine the coral problem in detail . . . The overpowering isolation of this landing place in the sea struck the two engineers with a wave of actual fear. How in God's name could the Navy hope to maintain men and machines on a pinpoint like this?

'These two islands wrote an associate, are the most desolate spots I have ever laid eyes on. There is nothing on either island except millions of birds of every description. We went over both of them carefully and I can assure you it is a chore, since the birds' nests are some eighteen inches below the ground and about every four steps, you go down in them'.

With launch and rowboat and bathing suits, they [the engineers] crossed and re-crossed this . . . expanse, taking soundings and sampling the bottom...They had brought along a pair of Kanaka divers . . . Stripped of everything except goggles these 'skin divers' could often stay down as long as two minutes-long enough to get a good estimate of the size and shape of the coral heads.

Prospecting out through the reefs to the south, the situation was even worse-much worse than the Dredging Company had guessed . . . Here the coral had compounded with the fine white silt to lay down a sandstone as hard as granite and much more difficult to blast away. They had not counted on that. It would make the main dredging job more complicated than they had feared.

Coral was the heart of this island air base problem . . . Coral animals themselves . . . exude and leave behind them a flint-like deposit of calcium carbonate upon which new coral algae grow, exude and die in their turn. The process is fairly rapid and build up one of the toughest rocks know to man. Jagged and pitted with countless cavities and holes, this 'ledge', itself know as coral, is the stuff that men must dredge away" (Woodbury 1946).

The men working on the island constantly overcame new challenges that presented themselves in their unique working environment. Their immediate problem was a lack of drinking water and fresh food. The water problem was solved after a solid foundation was established and a big saltwater evaporator was installed. The food shortage was due to two problems. First, was the difficulty of keeping refrigerated units working on the island. Secondly, the food was often drenched by saltwater after making the trip from the boat to shore. The answer was found by using portable refrigerator units throughout the entire shipping and use period. The units were taken from the ship to shore and kept there until emptied. This invention was eventually used on all the Pacific islands.

Other inventive ideas continued to be created in order to conquer the coral. "Ordinarily Hawaiian Dredging tackled coral shoals with a trick of blasting know as 'bulldozing'. You simply sent down divers with sticks of dynamite: these were laid on the bottom in a line, then connected with firing wire and set off . . . But Johnston's reefs laughed at this . . ." (Woodbury 1946).

The answer to this problem came in the form of a dredge that was towed from Honolulu. It was an “ordinary Diesel crane on a shoal-draft steel barge. It could take two cubic yards at a bite with its clamshell bucket . . .” (Woodbury 1946). The second step in the process involved another jury-rig, an ordinary well-boring machine mounted on a flat-decked scow that was used to cut the large deep holes needed for such heavy blasting.

The workers were successful and [. . . as was the case with Midway and Wake], the work was rushed, and the Naval Air Station was commissioned ahead of schedule on 15 August 1941. Slightly earlier, by Executive Order No. 8682, the airspace above the waters within the three-mile marine boundary were designated as the Johnston Island Naval Airspace Reservation and the Johnston Island Naval Defense Sea Area, respectively.

In the summer of 1941, planes flown to forward areas of the Pacific came to rest at the island. These aircraft were American made and manned by Americans in uniform. Some of them were going to our growing base at Samoa while others were being flown to our soon-to-be allies . . .<sup>14</sup>

With the sudden increase in the program in July 1941, it was necessary to find additional space and all the new facilities were, therefore, placed on Johnston Island. Facilities were to be provided for one patrol squadron with tender support, together with a capability for emergency operation of one Marine landplane squadron, and a runway adequate for heavy bombers.

On August 1, 1941, Lieutenant Roland H. Dale, USN, as prospective Commanding Officer, and a draft of thirteen men reported aboard as the first personnel of Naval Air Station, Johnston Island. Although the station log for August 1 states that the station “was established and commissioned this date,” official correspondence indicated the date of commissioning was August 15, 1941. A part of the 16th Marine Defense Battalion had previously landed on March 1, 1941.

On December 15, 1941, just before sunset, Johnston Island was shelled by what were apparently two surface craft. The shelling lasted about ten minutes. There were no injuries to personnel despite a considerable distribution of shell fragments and in spite of the fact that there was no warning of the attack before the first shell exploded. The shelling caused considerable damage, but was limited to the temporary and permanent power houses.]

While morale was deeply wounded the island survived this first shelling in tact. A portion of this credit goes to the workers that frantically tried to prepare the island from attack. Prior to the December 15, 1941 shelling,

. . . the Navy and Contractors had spent a feverish week, sandbagging the hospital and burying ether, alcohol, and blood plasma nearby, in case of a direct hit on the sick bay itself. Meanwhile, Major Loomis of the Marines and PNAB engineer Hinkley, who had recently come over from Midway, developed a ‘cut-and-cover’ of making gun emplacements, using whatever materials they could find. There were a couple of old five-inch rifles on the island, four antiaircraft pieces, and a few machine guns. Each of the larger weapons was set up as solidly as possible on the dunes, then walled in with concrete cast in burlap bags. Over the top Hinkley placed heavy timbers stolen from the most convenient building, and on these a heavy load of sand. The cover was complete except for the gun port and entrance. The Navy believed that Johnston would be hit hard and it wanted everything possible underground . . .” (Woodbury 1946).

[Again, on December 21, 1941 the island was shelled. At 9:15 pm, local time, a flash of gunfire was reported to the southward by the tower sentry. Shortly thereafter a star shell burst was observed over the center of the lagoon at an altitude of about 1,500 feet. The star shell came from a submarine which, following the initial burst, quickly submerged.]

William P. Wetsch, who spent two years on the island, described the December 21, 1941 attack on Johnston Island. “On December 21 the Japs returned. That night is known on the island as the battle of star shells. They

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<sup>14</sup> Ramparts of the Pacific, Abend

were trying to silhouette our island. We were doing everything in our power to locate the submarine. They didn't silhouette us: we didn't find the sub. Casualties: broken ribs, stubbed toes and skinned shins—so effective was our blackout, and so ineffective were the lights from the star shells” (Bryan 1942b).

[The next day the Japanese returned and a large submarine was observed firing from outside the north reef. The first shell landed about 100 yards beyond the center of Sand Island. A second followed about fifteen seconds later impacted approximately twenty yards to the left of the far edge of the island. The third was short by about 100 yards and the fourth struck the CAA homing tower at its base, toppling it.]

After the December 22, 1941 shelling of Johnston Island, the announcement was heard on Radio Tokyo that, ‘The American base on Johnston Island has been annihilated’. A week later a Japanese submarine returned to Johnston Island and was hit by Marine fire. According to Woodbury (1946) it was the ‘islands’ first enemy sub and also the last’.

However, [. . . these attacks demoralized the civilian workers, who felt, as did the military authorities, that the island could not be defended against a planned landing. Civilian evacuation was, therefore, authorized and only the most important work was finished before the workers left the island. To further speed construction, military personnel did much of the labor work in connection with the construction and as a consequence, construction was completed in April 1942.

During the period of construction (April 29, 1941 to April 1942), there were 53 separate projects which were completed or nearly completed. These projects included dredging channel approaches and seaplane landing areas, construction of bomb-proof shelters, CAA living quarters, landplane runways, storage sheds, and gun emplacements.

The year 1944 proved to be one of transition for Johnston Island. Where it had been one of the forward defensive outposts in the central Pacific, it had become a rear area 4,000 miles from the advancing Pacific front. Where its air facilities once had been used for patrols which searched out the enemy and provided air cover for allied surface craft, it became an important midpoint and communication center on the aerial highway for tactical aircraft ferried to the distant fronts and a spur line and air transport terminal in the Pacific, servicing planes carrying millions of pounds of vital material and thousands of men to the front and returning battle casualties to Hawaiian hospitals. Where it had been logistically important as a refueling station for submarines and smaller surface craft, it became so for aircraft. Its development and changing function closely followed the chain of American success in the Pacific.

As a result of constant additions, land area increased in size so that the original island became the smaller portion of the total land mass. Its population changed from one of operational support to defense to a group of specialized units capable of supporting its operational mission. The Marine defense force and communication equipment were based on the earlier developed Sand Island, while the larger island handled all air and sea traffic.

The capture of the Gilberts in late 1943 and the Marshalls in early 1944 permitted the abandonment of the longer routes to the west by way of Palmyra and Christmas islands in favor of the more direct route through Johnston. In anticipation of its importance as an air stop, the Army also activated communications and Air Transport Command units. By March 14, 1944, a radio range was installed and operating on Sand Island.

Air Transport Command planes began to use the field in the closing days of February 1944, when the first hospital evacuation plane arrived. This event is inscribed in the Johnston Island history because it marked the arrival of the first woman on the island. February 25, 1944 was a red letter day because A.T.C. Flight Nurses, Lieutenants Alice Kirais and Elsie Nolan, stepped off a C-54 to find themselves among startled and appreciative throngs of males.

The first flights to and from recently captured Kwajalein Atoll went through Johnston in March 1944.

With the securing of major bases in the Gilberts and Marshalls, it was considered unlikely that Johnston would be subject to any attack greater than by submarine bombardment, commando raid, or air attack. The bulk of the 16th Marine Defense Battalion was therefore withdrawn from the island, leaving approximately 15 officers and 350 men from that unit to form the Marine Defense Unit, at the Naval Air Station, Johnston Island. Station personnel manned on a battle station basis all defenses, but the 90mm and three-inch batteries.

By the middle of 1944, Johnston had become an indispensable link in air traffic from the Hawaiian Islands to Tarawa, Majuro, Kwajalein, and beyond. Tactical aircraft on the way to the ever advancing front stopped for fueling and maintenance while their crews took a welcomed break. As the year advanced, the number of air transports increased, stopping to refuel and to feed passengers on their way to and from the Marshalls, Guam, and Tinian.

In the first six months of 1944, transient traffic increased eight-fold while local flights had decreased by fifty percent. Throughout the remainder of the war, air traffic continued to show a steady increase, mirroring the successful activity of U.S. forces in forward areas.

To keep abreast of the increased air traffic, 1,000 feet were added to the west end of the main runway making available a total of 6,100 feet. Parking areas were increased to 278,000 square feet. Additional land was necessary to complete these changes, and it was obtained from coral dredged from the lagoon during the process of deepening and lengthening the seaplane channel and the seaplane taxiing area.

A new administration building and control tower, which housed operations and Army and Navy communications offices, was completed and occupied during the first quarter of 1945. Oceanic Air Traffic Control, activated at Johnston Island on February 23, 1945, also moved into this building.<sup>15</sup>

After the cessation of hostilities in the Pacific, the Navy continued to maintain, at reduced strength, the Naval Air Station at Johnston Island. As Naval activity decreased, the status of the installation was changed to that of a Naval Facility on February 27, 1947. By order of the Secretary of the Navy and effective July 1, 1948, Johnston Island was transferred from the U.S. Navy to the U.S. Air Force and was assigned to Pacific Air Command (PACAIRCOM), formerly the 7th Air Force.

The Air Force, recognizing the verbiage used in the original Executive Order and possible problems pertaining thereto, states in Regulation 87-1, "Johnston and Sand Island". Although the Navy is exercising technical jurisdiction, the Air Force, by agreement with the Navy, has assumed operational control of these islands. Executive Order No. 6935, December 29, 1934, vesting jurisdiction in Navy has not been amended." Upon inactivation of PACAIRCOM on June 1, 1949, its personnel and responsibilities were assigned to the Pacific Division of Military Air Transport Service (PACD MATS).

Johnston Island continued to be of vital importance as a post-war base for military air travel to the south Pacific and Far East. Small Military Air Transport Service (MATS) detachments of Air Rescue, Air, and Airways (AACS) and Air Weather were stationed there.

During the Korean Airlift in 1951 and 1952, Johnston Island again assumed strategic importance and the airstrip was enlarged, partly by dredging, partly by fill, to accommodate the increasing traffic of troops, critical cargo, medical evacuees, and priority passengers.

In conjunction with the runway improvements, a major construction program costing over two and a half million dollars was begun. A modern base in miniature resulted, including permanent quarters, improved utilities, and the addition of much needed buildings. For a short period, military personnel were permitted to have their dependents accompany them to Johnston; however, this was terminated in October 1956.

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<sup>15</sup> History Johnston Island, a paper by Abrahams and Green

Also, the Department of Commerce, on September 13, 1957, was issued a five-year permit to occupy Building 701 for use by the Pacific Supervisory Office, Weather Bureau.

Although there was considerable discussion as to the possibility of inactivation or reduction of Johnston Island Air Force Base (AFB) to caretaker status during the latter part of 1957, it was decided to continue its operation with approximately 100 personnel assigned.

Strategic use of Johnston Island again occurred in connection with support of classified movements of aircraft to forward areas of the Pacific. During Operation HARDTACK, a project that included atomic tests in the Pacific, a classified Memorandum of Agreement designated the Commander of Joint Task Force SEVEN (JTF-7) as Commander of Johnston Island AFB for the duration of this project (April 22 to August 19, 1958).]

This agreement for atomic testing began one of the harshest periods of Johnston Island's history. According to Amerson et al. (1976),

As part of Operation Hardtack, two missiles carrying thermonuclear devices were fired from Johnston Island into the stratosphere to obtain information on the effects of nuclear detonations at high altitudes. Teak, the first of these shot was detonated at 2150 hours on August 1, 1958, at an altitude of 252,000 feet. The second shot, was detonated at 2130 hours on 12 August at approximately 100,000 feet. These were the first megaton devices detonated in the stratosphere by the United States (Hines 1962). The Pacific phase of Operation Hardtack lasted until August 19, 1958.

In addition to this testing, Johnston Island was used by the United States for other varied purposes. The Secretary of Defense granted permission on December 10, 1959 for transferring the U.S. Coast Guard (USCG) LORAN A and C Station to Sand Island. The Coast Guard facility on Sand Island was completed in 1961 and maintained a staff of approximately 25 men.

During 1958, a proposed Support Agreement for Navy Seaplane operations at Johnston Island was under discussion; however, it was never completed because requirements failed to materialize.

Throughout 1959, long drawn-out negotiations were conducted concerning the possible transfer of Johnston Island from the Air Force to the Army for the Nike-Zeus program. Plans for enlargement of Johnston Island by approximately 23 acres (by means of fill dredged from the ocean bottom) were made, and a contract was awarded on July 9, 1959, with a completion date scheduled for February 1, 1960. Construction personnel and equipment arrived in August and September. A causeway was built into the lagoon to facilitate obtaining the fill.

The first formal discussion regarding the transfer was held July 24, 1959 with representatives of the Pacific Air Force Base Command (PACAFBASECOM), the U.S. Army Hawaii (USARHAW), Headquarters Pacific Air Force (PACAF), Airways & Air Communications Service (AACS), 1502d ATW (MATS), the U.S. Weather Bureau, and the USCG. Other meetings included personnel from the U.S. Army Pacific (USARPAC), 14th Naval District, and Pacific Missile Range (PMR). The target date for the transfer was tentatively set for December 1959. A proposed Transfer Agreement was forwarded to higher headquarters on September 23, 1959.

At the time of these negotiations, the Secretary of the Treasury, by letter of June 30, 1959, requested the Secretary of Defense to make Sand Island available to the USCG for use as a LORAN A and C Station site. The Secretary of Defense, by letter of December 10, 1959, granted permission for the installation of the LORAN Station on Sand Island with the provision that it operate on a non-interference basis with the proposed Nike-Zeus program. As the LORAN Station satisfied requirements in support of military operations under the operational authority of the Commander in Chief, Pacific, the authority to shut down was vested in him. On October 30, 1961, the USCG relinquished its permit to occupy a portion of Johnston Island.

A coral-fill construction program was completed in June 1960, and approximately 25 additional acres were added to the island.

By August 1960, Air Force retention of Johnston Island seemed assured, and a survey was made to ascertain the scope of work required to restore base facilities to minimum operational condition. In September 1960, a request was made to higher headquarters seeking authorization to hire 20 more civilians for 60 days beginning January 1, 1961. This was necessary to facilitate rehabilitation of urgently required facilities and equipment. Extensive engineering activity continued throughout 1961. Also, during this period, the LORAN Station on Sand Island and the U.S. Weather Station authorized by the JCS Document 1910/10 were finished. Important contracts were let for modification and alteration, airfield pavement repair, and emergency runway lighting. Repair of the old distillation system and installation of new equipment was accomplished.

Several construction projects continued with a deadline of March 15, 1962 necessitated by the 1962 Pacific atomic tests.<sup>16</sup> JTF-8 and the Atomic Energy Commission (AEC) entered into an operational agreement with the Department of the Air Force on January 17, 1962 to take control of Johnston Island. Additionally, a memorandum of understanding was executed between Commander Joint Task Force EIGHT (CJTF-8) and Commander in Chief PACAF on January 18, 1962. As a part of this agreement, support of both the Coast Guard LORAN Station and the Weather Bureau Station, previously a commitment of Pacific Air Force Base Command, was undertaken by CJTF-8. Even though CJTF-8 controlled Johnston Island, the Department of the Air Force on April 9, 1962 issued a five-year Permit to the Department of Commerce (U.S. Weather Bureau Pacific Supervisory Office) to occupy and use Building 530.

Major construction projects in support of the test series were completed in May 1962; however, numerous minor projects continued throughout the test period. All existing facilities were augmented to the fullest extent possible, but were subject to the limitations imposed by useable real estate and available time.

JTF-8 completed the roll up at Johnston Island in December 1962 at which time sufficient facilities and personnel remained to maintain a holding posture.

CJTF-8 proposed, in his message 260302Z of October 1962, to the Chairman, Joint Chiefs of Staff, that steps be taken for preservation on the island of certain test assets there and to return operational control of the island to Commander in Chief PACAF, providing there were no plans for additional nuclear tests prior to mid-1964. The Joint Chiefs of Staff generally concurred; however, because of plans for possible use of Johnston Island during calendar year 1963, they, by their message 07183Z of November 1962, requested that the plan be reviewed in light of this development. While this review was being conducted, further direction by Joint Chiefs of Staff message JCS 7654 011648Z of December 1962 was received. It directed CJTF-8 to retain operational control of Johnston Island pending further guidance.

The purpose of retaining control was to carry out nuclear testing as expounded in this excerpt from Amerson et al. (1976).

Operational control of Johnston was again assumed by JTF-8 and the AEC on January 17, 1962 for the purpose of conducting additional high-altitude nuclear tests. Shot Starfish, an explosion of about 1.5 megatons, was conducted at an altitude of 200 kilometers on July 9, 1962. Another test, scheduled for July 25, 1962, was aborted after the test missile was destroyed.

During these nuclear tests, an elaborate water sprinkler system was installed on the original portion of Sand Island to protect the birds living there. In addition, other protective devices were used, including smoke pots placed upwind as a shade screen and aerial flares to divert the birds' attention from the flash of the blast itself.

[On January 16, 1963, CJTF-8 proposed that the control and support arrangements for Johnston Island be maintained until at least April 1, 1963. Additional plans and guidance for the Task Force were received from the Joint Chiefs of Staff through their Paper SM-373-63 of March 19, 1963. It was clear at this time that the most efficient procedure would be for CJTF-8 to retain operational control of Johnston Island at least through

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<sup>16</sup> United States Air Force Information from Histories, Pacific Air Forces Base Command 1959–1963



the completion of the 1964 test plans. This was proposed by CJTF-8 in his letter of May 4, 1963 to the Chairman, Joint Chiefs of Staff. In reply, the proposal was affirmed by JCS Paper SM-758-63 of June 11, 1963.

During and subsequent to the above exchanges, existing plans for improvement of the Johnston Island facilities were being executed, and further plans for additional facilities were being formulated. Additionally, as a result of this extension of the period of CJTF-8's operational control of the island, new host tenant agreements were negotiated with the Commander, Air Defense Command; the Commander, Space Systems Command; and the Commander Pacific Missile Range.

As a fitting recognition of the importance of Johnston Island and its environs and because of the additional land masses that have been created within the surrounding barrier reef, it has been approved by the Department of the Interior (DOI) that the Johnston Island complex be henceforth and forevermore known as Johnston Atoll. Further, it was proposed that the two man-made islands be named AKAU and HIKINA, Hawaiian words meaning north and east.

The following table depicts the changes in the Johnston Atoll acreage as a result of the most recent dredge and fill program.

Location	Acreage	
	1963	1964
Johnston & Sand	198	591
North	0	24
East	0	17
TOTAL	198	632

Unquestionably, the importance of this small land mass will continue and possibly increase over the succeeding years, and it is doubtful within the foreseeable future that it will ever again become a guano-laden uninhabited patch of unclaimed and unwanted real estate.]

## B.2 HISTORY 1965-1973

The present role of Johnston Atoll as a base of operations for possible future nuclear tests began in April 1958 during the Pacific atomic tests known as Operation HARDTACK. For certain high altitude tests, the decision was made to relocate the missile launching facilities from Bikini Atoll to Johnston Island. Later, in 1961, with the abrogation of the nuclear testing moratorium and the resumption of atmospheric testing by the Soviet Union, Johnston Atoll, under the command of CJTF-8, became a major operational base for conducting the 1962 DOMINIC nuclear test series. Subsequently, U.S. negotiations with the Soviet Union on arms control led to the development of the Limited Test Ban Treaty (LTBT) that was signed in the fall of 1963. As a result of the LTBT, plans for a 1964 test series were canceled; however, CJTF-8 continued to maintain operational control of Johnston Atoll under the Director, Defense Atomic Support Agency (DASA) (redesignated Defense Nuclear Agency [DNA] in 1970.)

The mission and the future of Johnston Atoll were to be guided by the national requirements for possible continuation of nuclear testing in the atmosphere. A significant influence for ratification of the LTBT of 1963 was President Kennedy's assurance to Congress that four safeguards would be established and maintained to keep the U.S. from falling behind in nuclear technology. Safeguard C required the development of the ability to resume testing promptly in those environments prohibited by the treaty in the event of abrogation of the treaty by the Soviet Union or if such tests should be deemed essential to national security. The National Nuclear Test Readiness Program (NNTRP), which supported this safeguard, was prepared jointly by the

Department of Defense (DoD) and the Atomic Energy Commission (AEC).<sup>17</sup> Johnston Atoll was established as the principal overseas nuclear test base to support this program. The following is a brief discourse of the events that led to this outcome for Johnston Island.

By early 1965, an advanced state of readiness-to-test had been developed at Johnston Atoll in support of the NNTRP. This readiness posture, which included an extensive building program on Johnston Atoll, was maintained until 1970. Annual exercises conducted by JTF-8, beginning in 1964, evaluated the capability of the AEC and DoD agencies to initiate nuclear testing within specified reaction times. These full-scale exercises at Johnston Atoll were Operation CROSSCHECK in 1964 and Operation ROUNDUP in 1965. Both exercises emphasized aircraft diagnostic and sampler missions in support of simulated air drop test events. Operation WINDLASS in 1966 and Operation PADDLEWHEEL in 1967 (the last JTF-8 readiness-to-test exercise) included, in addition to the previous years activities, a series of coordinated rocket firings from Johnston Atoll.

Extensive building of testing and support facilities including airfield improvements and the installation of a PMR tracking complex, continued during 1965 to 1967. An Air Force Baker-Nunn space camera station was constructed on Sand Island and was functioning by 1965. It has continued to remain in full operational status.

According to Amerson et al. (1976),

“As of 1965, Johnston Atoll was under joint operational control of JTF-8 and AEC. It served as headquarters and base of operations for resuming U.S. Atmospheric nuclear testing in the Pacific should the Test Ban Treaty of 1963 be nullified by a foreign world power. Tenants on Johnston Island included: U.S. Air Force and Navy units, and personnel of the Air Defense Command, Space Systems Command, and Pacific Missile Range”.

An agreement between the AEC and the DoD<sup>18</sup> in 1965 provided the basis for the necessary contractual arrangements for the use of a single contractor to support test operations in the Pacific area. H&N, the principle AEC contractor in the area at the time, continued to provide engineering, construction, maintenance and operating support services at Johnston Atoll and similar support at other installations in the Hawaiian area. The build-up program at Johnston Atoll provided laboratories, shops, rocket launch pads, rocket assembly buildings, storage bunkers, control and monitoring facilities, sampling and tracking facilities, photo and optical stations, and weather facilities<sup>19</sup> required for the test program. Master planning<sup>20</sup> of the island was constantly being revised to meet the changing needs of testing organizations.

A significant portion of the readiness-to-test capability is the THOR launch complex developed by the USAF, which was used for launching nuclear payloads during the test series (Dominic/Fishbowl) of 1962. Subsequent to that, this complex was operated by Program 437, a USAF Research & Development space program. There were fifteen scheduled THOR launches from 1965 to 1970. Since that time, only crew training (operations terminated short of actual launch) was conducted. Launch crews were provided by the 10th Aerospace Defense Squadron under control of Aerospace Defense Command, USAF.

A four story Joint Operations Center (JOC), the largest building (over 120,000 square feet of floor space) to be built on Johnston Atoll, was completed in 1965. The JOC, with visual aids, communications, and television facilities, contained the command post and control centers for controlling overall test operations.

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<sup>17</sup> Agreement Between the Atomic Energy Commission and Department of Defense on Responsibilities for Planning for the Support of Readiness and Conduct Test Operations Outside North American Continental Limits and Related Budgeting and Funding, dated September 1965.

<sup>18</sup> Memorandum of Agreement Between Department of Defense and Atomic Energy Commission Regarding Contractual Arrangements at Johnston Atoll, dated 18 February 1965.

<sup>19</sup> Johnston Atoll Facilities (Brochure) - AEC/DoD, November 1971 (H&N).

<sup>20</sup> Master Site Plans, Johnston Atoll - AEC/DoD (H&N). Facilities and Support Requirements Plan - Pacific Area - AEC/DoD (H&N). (C)

Improvements to the communications system in 1965 included the installation of a submarine multi-channel communications cable from Johnston Atoll to Oahu with additional cables connecting Johnston Island to Sand, Akau (North), and Hikina (East) Islands.

Surveys were conducted, in 1965, by the Naval Oceanographic Office<sup>21</sup> to obtain detailed information about the water flow regime around the Atoll and within the lagoon in support of certain tests planned at that time.

Continuing effort was made to protect the vulnerable man-made shoreline of Johnston Island, which is now almost entirely bounded by seawalls and sheet piles. This extensive shoreline protection, for which various methods of construction were used, became necessary for protection against the ever-present eroding sea.

In 1966 and 1967 a High Order Horizontal Control Survey of Johnston Atoll was performed by H&N.<sup>22</sup> Results of this survey yielded an accuracy of 1:25,000, and the computations and records were filed with the Army Map Service, Washington D.C.

During the years of the Vietnam conflict, Johnston Atoll continued to support the flow of air traffic enroute to and returning from Southeast Asia. Formations of tactical aircraft made use of Johnston Atoll's refueling facilities.

Due to increasing demands for additional jet commercial routes to the various Pacific islands, particularly to the Trust Territories, the Defense Department agreed to the Civil Aeronautics Board authorization of commercial aircraft use of Johnston Atoll as a refueling stop.<sup>23</sup> This resulted in Air Micronesia service to Johnston Atoll starting on May 17, 1968, the first scheduled commercial air service to the Atoll.

During July 1969, President Nixon visited the island enroute to and from a Navy aircraft carrier for the splashdown and recovery ceremonies of the initial lunar landing Apollo flight. This was the first visit to Johnston Atoll by a U.S. President.

National decisions were made in late 1969 to reduce the level of support to the readiness program and to revise the NNTRP. These decisions included the inactivation of JTF-8 and readiness test facilities at Johnston Atoll, and the transfer of operational and funding responsibility for Johnston Atoll to the USAF.<sup>24</sup> Effective July 1, 1970, operational control of Johnston Atoll was transferred to USAF and JTF-8 was inactivated with continuing readiness planning responsibilities assumed by Director, DNA.<sup>25</sup> The JTF-8 designator and records were retained by Director, DNA, for utilization as required. Responsibility for the operation and maintenance of Johnston Atoll was assumed by the 6486th Air Base Wing (PACAF) which was renamed the 15th Air Base Wing (ABW) on November 1, 1971, with no change in mission.

The population of Johnston Atoll, which had been approximately 1,200, was reduced to approximately 600 by the end of 1970, with about one-half military and one-half civilian contract personnel. The responsibilities of the Director, DNA, concerning readiness facilities at Johnston Atoll during the period of USAF operational control, were defined in Deputy Secretary of Defense Memorandum for the Director, DNA,<sup>26</sup> which stated that Director, DNA acting as an agent for the DoD should coordinate AEC and DoD requirements at Johnston Atoll necessary to meet the objectives of the revised readiness program. The relationships and responsibilities

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<sup>21</sup> Circulation Patterns, Johnston Island, Winter - Summer 1965, published by U.S. Naval Oceanographic Office, October 1966.

<sup>22</sup> Records of High Order Horizontal Control Survey at Johnston Atoll, dated October 1967 (H&N).

<sup>23</sup> Defense Atomic Support Agency, message PLSF 000826 DTG 171652Z of May 1968.

<sup>24</sup> Dep Sec Def Memorandum for Dir. DNA, subject: Readiness-to-Test, dated 27 April 1970. (S)

<sup>25</sup> Program/Budget Decision 282, subject: Transfer of Johnston Atoll, dated 10 December 1969.

<sup>26</sup> Dep Sec Def Memorandum for Dir. DNA, subject: Readiness-to-Test, dated 27 April 1970. (S)

of the 15th ABW (PACAF) and the DNA (JTF-8) at Johnston Atoll concerning readiness matters were delineated in a support agreement.<sup>27</sup>

Phasing down of the readiness-to-test posture caused a reduction in testing, the discontinuation of deployed exercises, and most readiness facilities to be placed in a standby status. Concurrently, the emphasis within the technical and experimental readiness-related programs of the AEC and DoD laboratories was shifted to accommodate AEC/DNA high-altitude phenomenology and effects. In September 1970, an AEC/DNA high-altitude development test, planned and funded prior to the decision to phase down, was carried forward to execution. A special JTF-8 organization successfully launched a THOR mated with an AEC developed non-nuclear High Altitude Test Vehicle. The launch demonstrated an all systems test as well as the scientific and technical capability to conduct high-altitude nuclear experiments in support of the NNTRP.]

Other testing occurred as well in 1970 on Johnston Island. "In the 1970s, the University of Hawaii, under sponsorship of the Atomic Energy Commission, performed extensive study of dredging and its effects on ciguatera, a toxin poisoning in reef fishes" (Raytheon Services Nevada [RSN] 1995).

[A new use for Johnston Atoll was coming. The U.S. was scheduled to return Okinawa to Japanese control; however, Japan opposed the storage of chemical munitions on their national territory. The decision was made during 1970 to remove U.S. chemical munitions from Okinawa; however, their retention as part of the national stockpile was considered necessary. Political pressure which precluded relocation of these munitions, designated RED HAT, to any point in the continental U.S. (CONUS) or Alaska resulted in the selection of Johnston Atoll, started in early 1971 and was completed in mid-November 1971. On Johnston Atoll they were placed under the custody and control of the U.S. Army 267th Chemical Company. Storage facilities for RED HAT in the southwest quadrant of Johnston Island were constructed by the Naval Facilities Engineering Command at an estimated cost of six million dollars, and occupied a 41-acre area.

Just prior to movement of the chemical munitions to Johnston Atoll, the Surgeon General, Public Health Service, reviewed the shipment and the Johnston Atoll storage plans. His recommendations caused the Secretary of Defense in December 1970<sup>28</sup> to issue instructions terminating missile firings and all aircraft flights to the Island except essential military flights to support the island's mission. As a result, Air Micronesia service was immediately discontinued, and rocket/missile firings were suspended.

Early in 1972 another politically unpopular storage problem arose with the phasing down of the Vietnam conflict which necessitated the movement of Herbicide Orange (HO) (a USAF defoliant spray mixture) from Vietnam. As a result of Congressional and citizen interest in disposal problems, the DoD decided to move the 1.37 million gallons (25,266 55-gallon drums) to Johnston Atoll for storage to await a means of future disposal. By April 1972, HO was in storage on the northwest peninsula of Johnston Atoll.<sup>29</sup>

In April 1972, 25,266 55-gallon drums of HO were received and placed in storage on Johnston Atoll. Of the total drums received, 8,990 developed leaks. Of those leakers, 4,050 had the remaining contents transferred to new drums, 4,668 had been repaired without transfer of the contents, and 14 remained to be reworked. The decrease in total stored drums of herbicide was then 258. The number of contaminated empty drums stored and awaiting disposition was 4,804. This number of contaminated empty drums was comprised of those drums leaking when originally received (not counted above), leakers re-drummed while in storage and new drums which showed leaks during transfer. Therefore, it wasn't possible to reconcile the above numbers with the total number of contamination drums. With the arrival of HO, there were numerous visits to the island

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<sup>27</sup> Support Agreement, Director DNA (CJTF-8)/15th Air Base Wing (PACAF) effective 1 November 1971 concerning Air Force/DNA responsibilities of Johnston Island Readiness Facilities.

<sup>28</sup> Dep Sec Def Memorandum for Sec AF and Dir, DASA subject: Operation RED HAT, Phase II Johnston Island, dated 3 December 1970. (C)

<sup>29</sup> Summary Report: Conference on Compatibility of RED HAT and Herbicide Orange with Readiness Activities on Johnston Island, Held at Headquarters Field Command, Defense Nuclear Agency, Kirtland AFB, New Mexico, 14-16 November 1972.

by the USAF, the U.S. Environmental Protection Agency (EPA), and contractor personnel concerned with HO disposal operations.

Disposal of the Herbicide Orange (Operation Pacer HO) was to begin in the fall of 1974, but because of various delays by the EPA and Air Force budget limitation, disposal was postponed until the fall of 1976. Work was then completed on the drum crusher and work area at Johnston Atoll for the transfer of HO from 55-gallon drums to an R-5 refueler truck, and later for transfer to the incinerator ship. The re-drumming activity began on September 30, 1974. As a part of the effort to dispose of the HO stored at Johnston Atoll and Gulfport, Mississippi, an attempt was made to filter out the 2,3,7,8-tetrachlorodibenzo-dioxin (TCDD), using filters of coconut charcoal. The 12 cylindrical filters used at Gulfport, Mississippi, contained approximately 13 grams of the contaminant TCDD. They were transferred to Johnston Atoll on December 8, 1976 and were stored in Bunker 785 while awaiting final disposition. While the TCDD was successfully removed, the resultant filters created a disposal problem beyond current technology. On April 26, 1977, the EPA issued a research permit to burn the 15,000 drums of HO from Gulfport, Mississippi, during July 1977. Modification of the re-drumming facility, installation of needed utilities and communications, and requisitioning/positioning of logistics support (i.e., R-5 refuelers, forklifts, personnel protective equipment) were accomplished in May and June in preparation for the re-drumming operation.

The Vulcanus, with its crew of 18 foreign nationals and the load of HO from Gulfport, Mississippi, arrived at Johnston Atoll on July 10, 1977. The monitoring equipment that had been airlifted to Johnston Atoll from the TRW Corporation at Redondo Beach, California, was immediately installed. Food, fresh water, and 30,985 gallons of diesel fuel were loaded from Johnston Atoll stocks. The Vulcanus sailed for the burn site (15°45'-17°45' N longitude, 171°30'-173°30' W latitude) at 140010Z July with seven monitors and one EPA representative as passengers. Incineration began at 0030Z July 15, 1977.

A special airlift mission was flown on July 21, 1977 in support of Operation Pacer HO. It flew from Hickam AFB to Johnston Atoll with a special seat configuration for 80 passengers and brought 61 new employees to perform the de-drumming. Additionally, 29 personnel who were already on Johnston Atoll under contract were used for the de-drumming phase of the operation.

The Vulcanus finished incinerating the Gulfport, Mississippi HO on July 24, 1977 and docked at Johnston Atoll at 0130Z July 26, 1977. A second special airlift mission departed Johnston Atoll 1615Z July 26, 1977 with the exhaust samples taken from the first burn. Its destination was Wright Patterson AFB, Ohio, where Wright State University analyzed the samples to determine the efficiency of the destruction of the TCDD in the HO.

In the interim and following two days of debriefings, EPA representatives granted permission on July 27, 1977 to proceed with the de-drumming of the HO stored at Johnston Atoll. This authorization specified that only half of the capacity of the Vulcanus could be loaded without a formal go-ahead from the EPA, because if the data from the first burn did not meet EPA specifications, the second half of the ship would have to be loaded with diesel fuel and a burn of 50 percent HO and 50 percent diesel would have to be conducted. During the first burn, the incinerator was extinguished by an unknown liquid at which time a cloud of exhaust plume engulfed the ship. To insure no harm occurred to the crew or monitors, complete physicals were given to 26 people at the Johnston Atoll dispensary while the ship was being loaded for the second burn.

Based on the results of the analysis of the exhaust samples from the first burn, a permit was issued on August 4, 1977 authorizing incineration of the remaining HO at Johnston Atoll. Loading of the second half of the HO on the Vulcanus was completed and it sailed at 1830Z August 6, 1977 with the second burn beginning at 0900Z August 7, 1977. A total of 30,875 gallons of diesel were loaded for this trip. When the second burn was completed, the Vulcanus returned to Johnston Atoll at 1830Z August 17, 1977.

The loading of the final drums of herbicide was completed on 1920Z August 23, 1977, a total of 24,795 drums had been loaded by that time. The Vulcanus sailed for the third burn with final incineration beginning at 1800Z August 24, 1977. A total of 24,170 gallons of diesel fuel were provided by Johnston Atoll. The third burn was completed at 2150Z September 3, 1977 and the Vulcanus returned to Johnston Atoll the next day.

The Vulcanus sailed out one more time from September 6-8, 1977 to burn the diesel fuel which had been used to rinse any residual HO from its holding tanks and to discharge the sea water which had also been used to rinse the tanks. A total of 11,716 gallons of diesel were provided for this voyage. The cleanup of the storage area and disposal of the dunnage on which the drums had been stored was completed on September 12, 1977. The remaining residual amounts of HO were considered insufficient to present any health hazard; thus, the ban on women being assigned to Johnston Atoll was removed.

The fact that no herbicide was spilled during the de-drumming and, due to the clean and efficient way the drums were emptied, there was no environmental impact noted.

The storage of RED HAT and HO was to remain an item of national interest. These subjects were included in NBC's telecast, "First Tuesday," as part of a three-part series on Biological Research and Chemical Agents. Filming for the report was accomplished during Mr. Tom Pettit's visit to Johnston Atoll in June of 1973.

A DNA Joint Hazard Evaluation Group study<sup>30</sup> conducted in July 1972 concluded that the hazards to both transient and island personnel from commercial aircraft use imposed by the storage of RED HAT were very small. This, plus subsequent considerations by the Surgeon General, the U.S. Public Health Service, and the DoD Deputy Assistant Secretary for International Security Affairs, led to conditional lifting of commercial flight restrictions at Johnston Atoll. A civil aircraft landing permit was completed by Continental Air Lines/Air Micronesia and the USAF, and air service resumed on April 29, 1973. Airport operations are also certified periodically by the Federal Aviation Administration.

During mid-August 1972, tropical storm "Celeste," located southeast of the Hawaiian Islands, blossomed into a full-scale hurricane. After close observation of Celeste's track for several days, it became apparent that Johnston Atoll would be in the path of the hurricane. The decision was made to evacuate the island, and by August 18, 1972 all personnel had been flown to Hickam AFB. This was the first known time the island had been completely evacuated since the Navy began construction in 1939. On August 19, 1972, Celeste struck Johnston Atoll at approximately 1400 hours local time. The Atoll was subjected to sustained winds of 100 knots with gusts up to 130 knots. The heavy surf primarily affected the north, northeast, and south sides of the island. On August 22, 1972, a seaborne cadre, consisting of an Army RED HAT checkout team and an Air Force/H&N team, was put ashore at Johnston Atoll from the Navy destroyer USS Lloyd Thomas to initiate restoration of life support activities. All other personnel were airlifted back to the island by August 23, 1972. The overall Celeste damage to the Atoll was assessed at approximately 3.2 million dollars. A report of Celeste's transit of Johnston Atoll has been prepared by the H&N Logistics Planning Group.<sup>31</sup>

In June 1973, the Deputy Secretary of Defense approved a USAF plan for the transfer of host manager responsibility of Johnston Atoll to DNA, which was formulated into a joint DNA/USAF agreement<sup>32</sup> with an effective date of transfer to July 1, 1973. Later the Deputy Assistant Secretary (Installations) issued a Use Permit for Real Property, granting DNA use and occupancy of Johnston Atoll. Command of Johnston Atoll by DNA was exercised through the Commander, Field Command (FCDNA), with the Commander, Johnston Atoll being under FCDNA for operational and administrative control.<sup>33</sup> As a result of the transfer of management, the military support personnel remained at Johnston Atoll and were reassigned to Detachment 2, 1136 Special Activities Squadron, for administrative purposes. This arrangement, along with additional

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<sup>30</sup> An Evaluation of Hazard to Island and Transient Personnel as Associated with RED HAT Stores and Aircraft Operations on Johnston Atoll - by the Joint Hazards Evaluation Group - July 1972.

<sup>31</sup> History - Hurricane CELESTE (Johnston Atoll) August 1973 (H&N).

<sup>32</sup> Memorandum of Agreement between the Department of the Air Force and Defense Nuclear Agency - concerning the transfer of host-manager responsibility at Johnston Atoll. Effective 1 July 1973.

<sup>33</sup> Additional information concerning management of Johnston Atoll is contained in a joint AEC/DNA document, "Readiness Relationships Document," which defines the inter- and intra-agency relationships established to maintain readiness and their planned usage of Johnston Atoll. This document is available from Director, DNA.

arrangements for activity support, was provided for by an agreement between FCDNA and PACAF.<sup>34</sup> An agreement between AEC and FCDNA<sup>35</sup> provided for the contractual arrangements for the support of the Atoll.]

Remaining in effect, down through the years, is the Executive Order which originally designated Johnston Atoll as a bird sanctuary. The bird population, principally at Sand Island, shows little if any effect by the numerous activities to which the Atoll has been committed during its years of development.

[During the period of this report, Johnston Atoll has been home of some 600 to 1,200 civilian and military personnel. Since the social and recreational activities associated with normal civilian life was lacking, emphasis was given to providing as much other recreation as possible. The following recreational facilities were available.

- Basketball
- Boating
- Bowling
- Fishing
- Golf - Driving Range
- Golf - Miniature
- Golf - 3 Par, 9 Hole
- Gymnasium
- Hobby Shop
- Library & Special Services
- NCO Club
- Officer's Club
- Pool (Billiards)
- Scuba Diving
- Softball
- Swimming
- Tennis
- Theater
- Volleyball
- Waikiki Club

The following table depicts the major changes in the Johnston Atoll acreage as a result of the dredge-and-fill programs since 1964 and until 1973.

Location	Acreage	
	1964	1973
Johnston & Sand	591	648
North (Akau)	24	25
East (Hikina)	17	18
TOTAL	632	691

<sup>34</sup> Support Agreement Between Pacific Air Forces and Commander, Field Command, effective date, 1 July 1973.

<sup>35</sup> Memorandum of Agreement Between the Field Command DNA and the Atomic Energy Commission, Nevada Operations Office, Regarding Contractual Arrangements at Johnston Atoll, dated 1 July 1973.

Throughout the 1970's, Johnston Atoll (environment, flora, fauna) has been the subject of numerous studies and surveys. Periodically, the Smithsonian Institution has investigated the bird life in the Sand Island bird sanctuary, including one effort in 1973 when an ecology survey was made of Johnston Atoll at the request of the USAF Environmental Laboratory.<sup>36</sup> Earlier studies begun in 1963<sup>37</sup> by the Hawaii Marine Laboratory of the University of Hawaii, to investigate the effects on marine ecology in the lagoon from the extensive dredging and buildup of the Atoll, have continued to this day. A land management plan,<sup>38</sup> prepared at the request of CJTF-8 in 1964, was used as a guide for developing plant life on the Atoll principally for the control of erosion from wind and water.

Another environmental programs, continuous since 1966, by the Laboratory of Radiation Ecology, College of Fisheries, and University of Washington, has been conducted to obtain information for predicting and evaluating the biological consequences of a possible nuclear test series at Johnston Atoll. Reports on this program were submitted to the AEC annually.

The years 1965 to 1973 saw a number of important changes in the usage of Johnston Atoll, all resulting from national policy. It retained its capability to support the NNTRP, although at a somewhat reduced capability. Akau and Hikina Islands essentially closed down and most readiness facilities were mothballed. Johnston Island became a storage site for chemical munitions and HO, material not publicly accepted elsewhere.] Thus, Johnston Island enters a new period of its history.

### **B.3 HISTORY 1973 – JUNE 15, 2004**

The following study covers the history of Johnston Atoll from 1973 to the present. The primary source of information is the *Johnston Atoll Installation Restoration Program Management Action Plan* prepared by RSN in 1995. Other references used include the U.S. Army/PMCD *Annual Status Report of the Disposal of Lethal Chemical Weapons and Materiel* for the years 1994, 1995, 1996, and 1997 and the Field Command Defense Special Weapons Agency (FCDSWA) *Johnston Atoll Annual Historical Report* for 1995, 1996, 1997, and 1998. Additional referencing for events that occurred after 1998 are included in the references included at the end of this Appendix.

Following safety studies and implementation of appropriate on-island constraints, restrictions on aircraft flights within Johnston Atoll were revised to allow resumption of commercial flights on April 29, 1973. Effective July 1, 1973, host-management of Johnston Atoll was transferred to DNA. The USAF 15th ABW retained real property and reporting responsibilities, and issued a permit granting DNA use and occupancy of Johnston Atoll, including all facilities and improvements thereon. Command of Johnston Atoll was executed through the Commander, FCDNA, and Detachment 1 (FCJ), FCDNA. A program to clean up the radiation contamination at Johnston Atoll started in 1974 with a radiological survey of Johnston Island and Sand Island to identify hot spots, using gamma-based detectors. Physical pickup of the transuranic contamination (plutonium and americium) began in 1975.

Elsewhere in 1975, as a first step in reaching a ban on chemical weapons, the U.S. signed the Geneva Protocol. This agreement condemned the use of chemical weapons except in retaliation to a chemical attack. As a result of this agreement, the U.S. began working to achieve an international ban on the manufacture, stockpiling, and use of all chemical weapons. Hence, the foundation for the Johnston Atoll Chemical Agent Disposal System (JACADS) was laid down.

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<sup>36</sup> Primary Investigator and Director, Baseline Ecology Survey of Johnston Atoll, December 1973, by Amerson, A. Binon, Jr., and Jenkins, Dale. Smithsonian Institute (OES).

<sup>37</sup> Technical Report No. 5, January 1965, An Ecological Reconnaissance of Johnston Island and the Effects of Dredging, published by the Hawaii Marine Laboratory, University of Hawaii.

<sup>38</sup> Long-Term Land Management Plan, Johnston Island, August 1964, published by District Public Works Office, Fourteenth Naval District, Pearl Harbor, Oahu.



Presidential action in January 1976 redefined Safeguard C to remove the requirement for the capability to promptly return to atmospheric testing. Johnston Atoll was placed in caretaker status on the assumption that “at least one year would be available for rehabilitation or construction of required structures prior to any use of Johnston Atoll as a test base.”

A Memorandum of Agreement was signed by the DoD and the DOI for co-management of Johnston Atoll in May 1976. The DoD, the designated agency for administration, represented by the DNA, was given responsibility and jurisdiction over Johnston Atoll and its human residents and visitors. The DOI, represented by the U.S. Fish and Wildlife Service (USFWS), was given primary responsibility and jurisdiction for the protection and preservation of Johnston Atoll’s natural resources, fish, and wildlife. Furthermore, both parties would work in unison to protect, preserve, and improve the natural resources and the fish and wildlife of Johnston Atoll.

A comprehensive radiological survey was completed in 1980 to record transuranic contamination remaining from the 1962 THOR missile aborts. Contaminated structures were dismantled and isolated within the former THOR Launch Emplacement No. 1 (LE-1) as a start for the cleanup program. The Air Force initiated research on methods to remove dioxin contamination from soil resulting from leakage of the stored HO. Preparations for JACADS started under funding by the U.S. Army Toxic and Hazardous Materials Agency. The southwest peninsula was selected as the JACADS site to keep army activities together, maintain the disposal plant upwind of the Red Hat Storage Area (RHSA) and downwind of the containment area, and minimize encroachment on land areas reserved for Safeguard C and other technical activities.

During 1984, a long-range review for shoreline protection was initiated. Personnel from the U.S. Army Waterways Experiment Station inspected the shoreline and found some seawall problems adjacent to the south (RHSA) shore. The EG&G performed an extensive survey of the northwest corner of Johnston Island to determine the extent of dioxin contamination. The JACADS Facility construction began with major rehabilitation of facilities and utilities.

In 1985, the cleanup of transuranic contamination continued when the contaminated LE-1 THOR missile shelter and stored materials were transported to the Nevada Test Site for disposal. A program to relocate and consolidate contaminated soil within LE-1 continued. The U.S. Army Chemical Activity, Western Command (USACAW), now known as USACAP (U.S. Army Chemical Activity Pacific), was established at Johnston Atoll to manage the JACADS construction and Army operations. A military police company was assigned, sea and air surveillance radar was installed on top of the JOC, and an MK-12 patrol boat was procured for Atoll defense. In addition, rehabilitation of almost all housing, support facilities, and utilities was completed in preparation for the buildup of personnel and Atoll activity.

In 1985, the U.S. Congress enacted Public Law 99-145, which served to establish the Chemical Demilitarization Program. This law and its subsequent amendments directed the DoD to destroy the U.S. stockpile of unitary chemical weapons, the majority of which were more than 40 years old and contained live chemical agents that were deteriorating over time, by December 31, 2004. It was felt that further continued storage of the stockpile served as a source of risk to the health and safety of both the public and storage yard workers and also to the environment from a single catastrophic event (PMCD 1995).

In 1986, a Disaster Preparedness Plan was developed to cover a wide range of potential situations. The plan called for the assumption of control by a senior Army officer in the event of an attack or chemical accident. A reverse osmosis (R/O) unit was installed in the Fresh Water Treatment Plant. This replaced saltwater distillation as the primary means of freshwater production. The construction of 19 munitions storage igloos was completed and construction of the JACADS Facility was initiated. The demonstration of a pilot “mining” plant for the removal of transuranic contamination from soil was completed with excellent results. Project THUMPER was also completed during this time. This project, conducted by Los Alamos National Laboratory, collected data on the depth of the coral atop the volcanic cone supporting the Atoll. The results showed that the coral is approximately 1 mile thick.

Due to the JACADS project and anticipated conflicts and potential disturbances to Johnston Atoll's ecosystem from the increase in human population and activities, the Army retained Woods Hole Oceanographic Institution (WHOI) to provide oceanic impact analyses. In addition, a biologist from the USFWS was stationed on Johnston Atoll full-time in 1986.

In 1987, a small-arms firing range (i.e., the Dragon Firing Range) was constructed on the southwest end of Johnston Island. The Disaster Preparedness Plan was expanded, and a complementary Physical Security Plan was completed. An ASR-8 radar system was installed to improve sea and air surveillance capability. The U.S. Army Corps of Engineers completed a shoreline protection study of all Johnston Atoll islands and a major JOC modification was initiated which included the installation of a 1,200-line digital telephone switch, and the addition of a 10,500-square-foot health clinic.

By 1988, the remaining parts of the JOC modification project were completed. This included the addition of an Emergency Operations Center and changes to make the JOC a Chemical Protective Shelter with a full positive-pressure system and personnel decontamination area. A second R/O unit for the production of freshwater water became operational and a full-scale 'mining' plant was set up and checked out in preparation for operations to remove transuranic elements from contaminated soil.

By 1989, a complete oceanographic survey was performed by WHOI. This work began in 1983 in collaboration with the University of Hawaii. An important outcome of this study was that it doubled the documented species of fish and other marine organisms in the Atoll.

Construction and modifications of facilities continued through 1989 and 1990. A Hazardous Waste Storage Facility and a Fire Training Pit were completed. Electric power generation was switched to temporary generators pending replacement or repair of units in the old system. A Cold Storage Plant, Vehicle Maintenance Facility, and Sewage Treatment Plant were also completed. The telephone switch capability was increased from 300 lines to 1,500 lines. Also in 1990, two full-time USFWS personnel, a Refuge Manager and a biologist, were stationed on Johnston Atoll to handle the increase in biological, contaminant, and resource conflict activities.

In 1991, additions and upgrades to telephone cables 05 and 06 were made to provide additional phone line capacity for the modular housing units, the 250-series dormitories, the new Fitness Center, and the new Vehicle Maintenance Facility. Responsibility for contracting communications services was transferred from the USAF to DNA. Power Plant alterations were completed and the configuration was changed to four 2,500-kilowatt (kW) Caterpillar generators and two 1,400-kW Enterprise generators and two 1,400-kW Enterprise generators. A study to define the Johnston Atoll Safeguard C baseline (personnel) was established. Work began on the renovation of the 250-series dormitories. The water supply was increased substantially by drilling four new saltwater wells. A third R/O unit, capable of producing 150,000 gallons per day of freshwater, was installed, bringing the capacity of the Water Plant to 400,000 gallons per day. Population peaked at 1,364 personnel assigned. In December 1991, the first phase of Operational Verification Testing (OVT) involving the destruction of GB-filled M-55 rockets at JACADS was completed (Department of the Army [DOA] 1994).

Also in 1991, the DoD Appropriations Act was enacted, recognizing a fragmentation of responsibility for the destruction of the chemical weapons and their by-products and directing the Secretary of Defense to organize an overall program with operational responsibility for all chemical warfare material destruction activities. As a result of this act, the U.S. Army Chemical Material Destruction Agency (USACMDA) was established in 1992, placing the responsibility for destruction of all DoD chemical warfare-related material under one agency (PMCD 1995).

On Johnston Atoll in 1992, two military construction projects (a \$4.1 million Consolidated Maintenance Facility and the \$1.6 million Reach V Seawall Repair) began. The USCG LORAN C Station on Sand Island ceased transmitting and was removed from service. Buildings on Sand Island were transferred to other activities. LORAN whip antennas on Johnston and Sand Islands were removed and the 625-foot LORAN tower and antennas were demolished. To simplify fuel demands, all diesel-powered motors, including the Power Plant generators, were converted to burn JP-5 fuel. In December, gusty fronts resulting from the

collapse of several tropical thunderstorms stalled in the general vicinity of Johnston Atoll. During the most intense part of the storm, a peak wind gust of 85 mph was recorded. The cleanup and repair of damages due to the storm cost approximately \$2 million. Population peaked at 1,357 persons assigned. JACADS completed OVT Phases II and III and started Phase IV (the final phase) (DOA 1994).

In 1993, the Community Center and the Consolidated Maintenance Facility were completed. The Battery Shed and High-Pressure Steam Facility were built, a Satellite Communications Ground Station was added, and a new Power Plant Switchgear Facility was constructed. The Seawall Reach V project was completed and a fifth 2,500-kW Caterpillar generator and switchgear were installed in the Power Plant. As part of a congressional action on DoD and Department of Energy (DOE) appropriations for FY 1994, Safeguard C was zero-funded; thereby, the requirement for maintenance of a capability to return to atmospheric nuclear testing was deleted. As a result, the mission of DSWA was redefined as that of providing base operational support to the U.S. Army missions on Johnston Atoll and completion of the Plutonium Clean-up Project. Aerial mapping of all islands and the reef were completed.

JACADS achieved full-scale operational status in May 1993 following the successful completion of all phases of the JACADS OVT (DOA 1994). Fifteen rockets were destroyed in the initial activity. The JACADS start-up and around-the-clock operations necessitated the requirement for 24-hour medical support. The services of a full-time dentist were also added. Four monitoring stations were installed on the Atoll to monitor the environmental impacts of the JACADS operation.

In January 1994 following completion of planned furnace upgrades, JACADS started operations. Operations were suspended, however, on March 23, 1994 when a small amount of agent was detected by stack monitoring equipment. Following a thorough investigation, which concluded that the incident was caused by operator error, and corrective actions, the destruction processing was resumed on July 12, 1994. Operations were interrupted again on August 26, 1994, when Hurricane John, with sustained winds of 85 knots and gusts to 105 knots, forced the evacuation of the entire Johnston Island population. JACADS sustained minor damage; however, the island infrastructure experienced substantial damage. Cost of damage from the storm and evacuation of personnel totaled approximately \$10 million. After completion of necessary repairs to the JACADS facility, destruction operations resumed on November 3, 1994. On November 19, 1994, an M-55 rocket undergoing destruction, detonated while being processed. The explosion was completely contained in one of the Explosive Containment Rooms, where rocket processing occurs. No personnel injuries or agent exposures occurred. Though unfortunate and considered an unlikely occurrence, this incident and the successful containment of the explosion helped to demonstrate the safety of the plant design (DOA 1994).

Also in 1994, USACMDA was redesignated the U.S. Army Chemical Demilitarization and Remediation Activity when it was merged with the U.S. Army Chemical and Biological Defense Command (PMCD 1995).

Following Hurricane John, a radiological survey under the direction of the Plutonium Project Engineer in charge of the Plutonium Yard operation was conducted. This survey of the general grounds of Johnston Island was conducted using hand held FIDLERs (Field Instruments for the Detection of Low Energy Radiation). Duties were split among two teams, a Las Vegas team that covered all building structures and a Johnston Island personnel team that covered all of the grounds.

On March 13-17, 1995, the DOE and DNA conducted its annual joint external Environmental Compliance Assessment Visit, and in September 1995, EPA Region IX conducted its annual Resource Conservation and Recovery Act (RCRA) Facilities Inspection in response to the Final RCRA Facility Investigation Report (RFI), which was submitted to EPA Region IX in August 1994. A Waste Water Treatment Plant Pilot Study was initiated by Metcalf and Eddy to evaluate the effectiveness of alum and polymer in improving the settling properties of the suspended solids and funding was made available to design and construct an additional clarifier at Johnston Atoll (FCDSWA 1995).

JACADS surpassed the "one million pounds of lethal chemical agent destroyed" mark in April 1995 and completed the destruction of all chemical agent-filled M-55 rockets stored on Johnston Island. Also in 1995, the Chemical Demilitarization and Remediation Activity was redesignated as the Program Manager for

Chemical Demilitarization (PMCD) with responsibility for chemical stockpile disposal, disposal of non-stockpile chemical materiel, chemical stockpile emergency preparedness, and development of alternative technologies and approaches for chemical agent and munitions disposal (PMCD 1995).

Hydrocarbon product recovery pump installations increased from 7 to 15 units as an interim corrective measure for solid waste management unit (SWMU) No. 16 (Power Plant Spill Site) and PACAF continued its bioslurper pilot test. Over the one-year period beginning in October 1994, 4,451-gallons of product were recovered. In addition to the product recovery program, an attempt was made to continue to stop fuel seepage into the lagoon by using an epoxy gel to plug holes in the seawall (FCDSWA 1995).

Building 788 closure activities were undertaken February 1-3, 1995 (RSN 1995c). In the final step of closing the RCRA Part B dioxin-contaminated waste storage facility (i.e., the Building 788 storage bunker), dioxin-contaminated waste was shipped to Coffeyville, Kansas, and was incinerated at Aptus, Inc. In addition, a berm was constructed around the Former Herbicide Orange Storage Site (SWMU No. 2), using soil that was part of SWMU No. 12 - the Red Hat Area Berms (FCDSWA 1995).

OHM Engineering stabilized 2,100 cubic yards of nonhazardous soil and 10,000 cubic yards of hazardous ash from SWMU No. 1 (Solid Waste Burn Pit) and placed it in an engineered cell at SWMU No. 6 (Mixed Metal Debris Site). The Waste Storage/Old Fire Training Pit, Recycle Yard, and Mixed Metal Debris SWMU site closure letters were submitted to EPA Region IX (FCDSWA 1995).

On September 28, 1995, the Johnston Atoll Plutonium Contaminated Soil Cleanup Project had processed 98,805 metric tons of soil since October 1, 1994, bringing the total tonnage of soil processed since the plant became operational to 125,092 metric tons (FCDSWA 1995a).

Also in 1995, Dr. Phil Lobel continued a study of erosion of plutonium into the lagoon and submitted an unsolicited proposal for the development of a large-area underwater alpha detector to survey the plutonium contamination in the lagoon in order to support the lagoon risk assessment. In July 1995, the Base Operating Support (BOS) Contract was awarded to Kalama Services (joint venture comprised of H&N, SERCo, Inc., and Burns and Roe Services) with transition from RSN scheduled to begin in August with a planned completion date of December 31, 1995 (FCDSWA 1995).

The RFI Final Report was submitted to EPA Region IX in late September 1995. In December 1995, the Waste Water Treatment Plant (WWTP) Pilot Study being performed by Metcalf and Eddy was completed, and the results were evaluated. Initial construction stages of the new WWTP clarifier, which would eliminate permit discharge monitoring problems, began in June 1996 and the first phase was completed in September of 1996 (FCDSWA 1996).

Projects completed in FY95 included the installation of a hybrid cooling system to Generators 1-5 at the Power Plant; installation of R/O System 1A at the Water Plant; a design project for replacement of the airfield lights; removal of two EMD 4,500-kW portable generators; a redesign of the Johnston Atoll Municipal Solid Waste Incinerator Project; and an air-conditioning study (FCDSWA 1995).

Projects awarded in FY95 included the replacement of Enterprise Generator No. 6 at the Power Plant; a \$2.5 million renovation project for Building 690; and a design/build contract to construct a clarifier for the WWTP (FCDSWA 1995).

On June 26, 1996, DNA changed its name for the fourth time in its history. DSWA evolved from the Armed Forces Special Weapons Project (1947), to the Defense Atomic Support Agency (1959), to the Defense Nuclear Agency (1971), and to DSWA (1996) (FCDSWA 1996).

A field investigation team from Pacific Division, Naval Facilities Engineering Command, and Hawaii Pacific Engineers conducted a survey on the solid waste collection at Johnston Atoll. Information collected from the assessment was to be used for characterization of Johnston Atoll's solid waste streams and verification of the components for use in the design of the future material recovery and composting facility (FCDSWA 1996).

PACAF continued its bioslurper pilot test and OHM installed a new bioslurper pump with 32 wells around Tank No. 49. As of September 1996, the system had recovered 20,214 gallons of product. In addition to the product recovery program, the attempt to stop fuel seepage into the lagoon was continued through the use of epoxy gel to plug the seawall (FCDSWA 1996).

The Waste Storage/Old Fire Training Pit, Recycle Yard, and Mixed Metal Debris SWMU final closure letters, and the Certificate of Clean Closure for Building 788 (Storage Site for Dioxin Contaminated Material) were still pending from EPA Region IX in September 1996 (FCDSWA 1996).

For the year beginning October 1, 1995, ThermoNUtech (formerly TMA) had processed 100,000 metric tons of soil bringing the total amount of processed soil to 127,092 metric tons with 83 percent clean soil recovery (FCDSWA 1996). On October 3, 1996, the soil screening plant was assembled, placed at the east side of the hot particle pile, and operations began for sorting of material from the hot particle pile. By October 17, 1996, the plant had reach full operational status, and a total of 130 cubic yards of hot particle pile material had been processed. In December, the year-to-date total metric tons processed through the segmented gate system was 7,698.1, with a total of 6,470.2 metric tons being diverted as clean and yielding an average weight reduction of 84 percent while the soil screen plant processed 911 cubic yards of hot particle pile materials (FCDSWA 1997). Throughout the year, Oak Ridge National Laboratory continued an independent verification and certification of the cleanup plant computer program and post remediation and ground areas (FCDSWA 1997).

Dr. Phil Lobel continued a study of plutonium erosion into the lagoon and developed and demonstrated a large-area underwater alpha detector to survey for plutonium contamination in the lagoon in support of the lagoon risk assessment (FCDSWA 1997).

A project to replace Enterprise Generators No. 6 and 7 with Caterpillar Generator No. 6 was completed in September 1996. In addition, the Corps of Engineers completed a \$2.5 million renovation project of Building 690, Army Barracks (FCDSWA 1996).

On November 20, 1996, EPA Region IX issued DSWA/PACAF an Acceptance of Certification of Clean Closure for Building 788 (EPA Region IX 1996).

Design projects awarded in FY96 included projects to repair and replace a 5,000-foot-long section of the runway; repair the main wharf; repair Seawall Reaches A and V; replace chiller No. 3 in the JOC; renovate and repair the structure of Buildings 290 and 291; replace the Marina; and repair Building 30, the Military Affiliated Radio Station (FCDSWA 1996).

Construction projects awarded in FY96 included installation of a backup generator at Building 517; replacement of roofs on Buildings 519, 520, and 521; painting of miscellaneous facilities; installation of smoke detectors in Buildings 16, 18, 291-297, and 691-699; installation of a bridge crane in the Power Plant; replacement of the Tactical Air Communication Navigation Building; replacement of laundry boilers; renovation of the entry area at the Tiki complex; construction of a paint booth at Building 960; construction of an abrasive blast booth; and demolition of Building 120 (FCDSWA 1996).

During FY 1996, the JACADS Facility safely destroyed over 580 tons of nerve agent GB contained in more than 44,500 bombs and projectiles, and in the process completed destruction of all nerve agent GB bombs stored on Johnston Island in February 1996, 4 months ahead of schedule (PMCD 1996).

In 1997, JACADS continued to destroy the chemical stockpile on Johnston Island while providing valuable lessons for follow-on activities (PMCD 1997).

In February 1997, DSWA conducted a major accident response exercise, which served to test the search and recovery team trained by Kalama Services (FCDSWA 1997). In September 1997, a Navy Explosive Ordnance Disposal group arrived on island to recover demilitarized projectiles found near the Main Wharf. This team also assessed the North Island Firing Range and found the area of highest concentration of lead was located in

the berm and an area approximately two feet from the base of the berm. At that time, it was decided that the North Island Firing Range would need to be remediated (FCDSWA 1997).

In 1998, the ten-year plan was revamped to acknowledge island closure within the next eight years. The V-1, V-2 seawall design was completed in June. The tank inspection and new roof installation on Tank No. 260 were delayed until September 1998. Following the completion of repairs to Tank No. 260, the roof on Tank No. 261 was scheduled for a similar replacement. In addition, the petroleum, oil, and lubricants (POL) Truck Fill Station (Facility No. 265) associated with Tank Nos. 260 and 261 was also programmed to be replaced. The design for Facility No. 265 had been completed and Facility No. 50 and its associated filling station is scheduled to be replaced by modular units. The design for Facility No. 50 was modified to provide enough tank storage to off-load one MIC barrel (42,000 gallons).

Also in 1998, two additional projects were awarded to design and install “pig” launching and receiving stations. During the actual design stage, it was determined seven would be required based on turns within the Johnston Atoll’s POL system. The design was completed in early 1998. The TACAN was decommissioned in July, and turned over to the engineering department for disassembly and removal from the island.

On October 1, 1998, the DSWA merged with the On-Site Inspection Agency and the Defense Technology Security Administration along with several other activities of the Office of the Secretary of Defense. Combined, they are now known as the Defense Threat Reduction Agency (DTRA). Also in October, OHM Remediation Services, installed five new dual-vacuum extraction wells as part of the bioslurper project, which is removing free product from underground at the Power Plant Spill Site. These wells were installed in a lined trench along the seawall, with two additional ones installed around the bioslurper this summer. As a result, the bioslurper recovered 25–40 gallons of product weekly and migration through the seawall into the lagoon has been stopped.

Program Budget Decision 082, dated December 2, 1998, mandated the realignment of Johnston Atoll host-management responsibilities from DTRA to the Air Force, with transfer of host-management responsibilities beginning in FY 1999. On October 1, 1999, the Air Force officially assumed host-management responsibilities for Johnston Atoll. With the relinquishment of host-management responsibilities, DTRA still maintains two Johnston Atoll-associated missions: oversight of chemical treaty obligations and restoration of some legacy environmental issues.

The Air Force mission upon assumption of host-management responsibilities was to provide base support for the national chemical weapons program (i.e., chemical weapons storage and demilitarization). Management of Johnston Atoll is accomplished by Detachment 1 (Det 1), 15th Air Base Wing (15 ABW) and is further supported by Operating Location A (OL-A), Det 1, 15 ABW (the Johnston Atoll Program Office at Hickam AFB, which falls under the Major Command of PACAF).

In 1999, the existing cathodic protection system at Johnston Island was evaluated (PSG Corrosion Engineering 1999). The system evaluation included Tank No. 49, Navy Pier pipelines, Facility No. 51, Tanks No. 52 through 57, Tanks No. 260 and 261, the JACADS JP-5 pipeline, and the Main Wharf intake boxes and pipelines. All segments of the cathodic protection system were operational with some modifications and maintenance recommended. The only system found to be non-operational was associated with the truck loading pumps at Facility No. 51, which was recommended for repairs and maintenance.

In January 2000, JACADS began disassembly of the Dunnage Incinerator, as this unit was no longer required.

In March 2000, the BOS Contract was awarded to Raytheon Technical Services Corporation (RTSC). Transition from Kalama Services to RTSC was completed by June 30, 2000.

On November 29, 2000, the Army destroyed the last of the remaining chemical weapons stockpiled at Johnston Atoll, completing the destruction of four million pounds of stored chemical agents and weapons. With completion of this milestone, the Army initiated actions for closure of the JACADS Facility, which were to include decontamination, dismantling, and demolition of the main JACADS Munitions Demilitarization

Building (MDB), associated support facilities, and metal-clad structures in the RHSA. The overall focus of actions at Johnston Atoll has now shifted to the impending closure of JACADS, completion of environmental actions, and Johnston Atoll-wide demolition and decommissioning activities.

During the time period January 12, 2001 through February 18, 2001, the Air Force conducted a lead-based paint screening survey of all accessible Johnston Atoll facilities in preparation for upcoming demolition and decommissioning (Earth Tech 2001).

On March 22, 2001, JACADS processed the last munitions components, several fuses, and activators from VX land mines. The Deactivation Furnace System began undergoing modifications to process carbon. Surety status at the JACADS Facility was terminated on April 1, 2001. The JACADS Facility was considered clear of all recoverable chemical agent. On May 18, 2001, EPA Region IX issued a Conditional Closure Approval Letter allowing JACADS to begin limited RCRA closure activities.

As of August 31, 2001, the USACAP mission had been completed and all personnel had departed Johnston Island.

During October 2001 through December 2001, DTRA conducted cleanup of the Abandoned Firing Range on North Island. Approximately 212 tons of lead-impacted coralline soil and debris were removed and disposed at a CONUS disposal facility. Based on actions taken, no further action was warranted for this site (Earth Tech 2002b).

During 2002, recommendations for POL system upgrade or maintenance as recommended by earlier studies and which were not already in-place, were implemented with the objective of meeting a five-year design service life. Weldin Construction Inc. was the contractor hired to undertake repairs at Tank Farm 50 (Tanks 52–57), Facility No. 51 (Vehicle Refueling Station). Pipeline valve stations were repaired and pressure-tested to 150 pounds per square inch and the cathodic protection system was upgraded. Additionally, Facility No. 265 (Truck Fill Station) in the POL Tank Farm) was repaired and upgraded.

Between March 4, 2002 and March 22, 2002, the Air Force conducted a visual inspection, bulk sampling, and assessment of the friability and condition of suspected asbestos-containing material in preparation for upcoming demolition and decommissioning. The asbestos survey focused on facilities not previously included in the 1995 asbestos inspections conducted by Baker Environmental, Inc. (Earth Tech 2002a).

In April 2002, the POL pipelines were integrity-tested using a volumetric leak detection system. MOGAS, diesel fuel, and JP-5 pipelines were tested from the Main Wharf east and west intake boxes to Valve Box 202, to Facility No. 50, and to the Facility No. 265 Truck Fill Station at the POL Tank Farm. All tested segments were certified as passing (Vista Research, Inc. 2002).

On May 3, 2002, JACADS, upon completion of carbon processing at the facility, shut down the Deactivation Furnace.

From June 2002 through November 11, 2002, Weston Solutions, Inc. (Weston) conducted a remediation and radiological survey project for DTRA within the confines of the Radiological Control Area (RCA). As part of the remedial action, Weston demolished Facility Nos. 701, 786, 794, and 796. Approximately 240 tons of contaminated metal debris, 200 cubic meters of concrete debris, and approximately 45,000 cubic meters of coralline soil above the cleanup standard of 13.5 picocuries per gram (pCi/g) were buried in a landfill created within the former LE-1 area. The landfill was capped with at least 61 centimeters of clean coralline soil and permanent markers were placed at each corner of the landfill to identify the landfill area. A radiological survey conducted after landfill completion determined that the land surface within the RCA did not exceed the applicable cleanup standard (below 13.5 pCi/g). The remaining buildings, Facility Nos. 790 and 795, met Nuclear Regulatory Commission Guide 1.86 criteria for both surface and removable contamination (Weston 2004).

In July 2002, JACADS processed 61 Chemical Agent Chemical Identification Sets (CAIS) transferred to Johnston Island from several locations around the Pacific. Many of the CAIS were deployed during World War II and abandoned.

EPA Region IX approved the PMCD Closure Plan for JACADS on September 4, 2002. The Brine Reduction Area was shutdown October 14, 2002.

Demolition, decommissioning, and wildlife hazard mitigation was conducted on the three Outer Islands (North, East, and Sand Islands) from October through December 2002. All Outer Island buildings were demolished (CH2M Hill 2005).

Between July 1992 and December 2002, a total of 15,565 gallons of free-phase petroleum product were recovered from the Power Plant Spill Site (SWMU No. 16), using the bioslurper system. In December 2002, the bioslurper system was removed and its components and associated piping were transported to the U.S. mainland for disposal.

Closure of the historical (inactive) and active POL systems on Johnston Island began in 2003 and was concluded prior to June 15, 2004. Closure activities associated with the historical POL system resulted in the in-place closure of approximately 35,335 linear feet of pipeline. Approximately 15,461 linear feet of active POL pipeline was cleaned, with approximately 13,700 linear feet closed in-place and 1,761 linear feet demolished because it was aboveground (CH2M Hill 2004c,a).

HQ PACAF executed an environmental staff assistance visit evaluating environmental compliance and closure-related environmental issues February 24–28, 2003.

A corrective measures implementation effort was conducted at SWMU No. 16 (Power Plant Spill Site) and Area of Concern (AOC) No. 1 (MOGAS Area) from February 2003 to March 2004 and resulted in the excavation of polychlorinated biphenyl (PCB)-contaminated soil. A total of 8,090 tons of PCB-contaminated soil and concrete was removed and shipped to the U.S. mainland for disposal. During excavation, a skimmer system was used to recover an additional 1,832 gallons of petroleum product resulting in a total of 17,400 gallons of petroleum product recovered from the site. Following confirmation that the PCB soil clean-up goal of 1 milligram per kilogram had been achieved, the excavations at SWMU No. 16 were backfilled to existing grade with clean coralline fill material. All treatment-based performance criteria specified in the Air Force RCRA Part B Permit have been fully met, leaving remaining soil within acceptable human and ecological risk-driven criteria. In accordance with Permit Corrective Action Criteria, the Air Force will continue groundwater monitoring and biomonitoring of the lagoon area associated with SWMU No. 16 and AOC No. 1 (CH2M Hill 2004b)

Det 1, 15 ABW, Johnston Atoll was redesignated as Det 1, 15th Airlift Wing (Det 1, 15 AW), Johnston Atoll on April 21, 2003 and assigned to the 15 AW.

JACADS shut down its last incinerator, the Metal Parts Furnace, on May 7, 2003. This action completed waste processing at the JACADS Facility. During the month of May 2003, JACADS shut down the ventilation system, opening the facility to the environment and signifying the facility's completion of agent decontamination. Demolition of the MDB began on May 20, 2003.

Between July 23, 2003 and September 16, 2003, DTRA conducted an interim removal action at the Vehicle Salvage Yard (SWMU No. 7). Approximately 4,909 cubic yards (5412.3 tons) of polynuclear aromatic hydrocarbon (PAH)- and metal-impacted coralline soil was excavated and transported to a CONUS disposal facility. Based on field screening results and fixed-base laboratory confirmation sample analyses, all impacted coralline soil above interim removal action levels was removed from the Vehicle Salvage Yard and immediate surroundings; therefore, no further action is warranted for this site (Earth Tech 2004).

On August 21, 2003, a Memorandum of Record was established between the U.S. Army and EPA Region IX documenting the agreement that JACADS may demolish the MDB and use the bunkers in the RHSA for



disposal of construction rubble and debris. After placement of the debris inside the bunkers, they will be secured and the entry blocked with a concrete block barrier (a.k.a. King Tut Block) to prevent access to the bunker interior (DOA 2003).

EPA Region IX, on September 4, 2003, issued the USAF and U.S. Army a RCRA Emergency Permit (EPA ID No. TTP000128702) to dispose of the following specified hazardous materials/hazardous wastes which are unsafe for air or sea transport, such as suspected phosphorus, off-specification chemicals that are water reactive, methyl ethyl ketone peroxide, acetylene cylinders containing acetone solution residues, explosive cartridges, and a charge cord containing lead explosives. The U.S. Air Force Emergency Ordnance Disposal team completed detonation of the aforementioned hazardous materials/hazardous wastes within the confines of the Dragon Firing Range (Facility No. 981) September 12–19, 2003.

On November 4, 2003, the successful safe dismantling of JACADS was celebrated in a ceremony held at the Hale Koa Hotel in Honolulu, Hawaii. On November 5, 2003, Government VIPs, officials, and regulators traveled to Johnston Island for placement of a commemorative plaque at the site of the former JACADS Facility.

On December 9, 2003, a Deactivation Ceremony was held on Johnston Island. Det 1, 15 AW, Johnston Atoll was deactivated under Special Order GS-04-010 dated November 25, 2003. Upon this inactivation, all Det 1, 15 AW responsibilities reverted to the 15<sup>th</sup> Mission Support Group.

During the week of December 5-12, 2003, RTSC removed all BOS contractor personnel from Johnston Atoll with the exception of those required to support airfield operations until December 26, 2003. The demolition and decommissioning contractor (CH2M Hill) assumed normal BOS functions.

During January 2004, a publication documenting the effects of the JACADS Project on the marine and terrestrial life at Johnston Atoll (*An Ecological Assessment of Johnston Atoll*, Lobel and Schreiber 2004) indicated “In their 20 years [six years before the JACADS Project began and continuing throughout its duration] of extensive research, Dr. Phil Lobel and Dr. Betty Anne Schreiber did not document any adverse effects of the JACADS Project on the marine life and wildlife of the Atoll. Today, Johnston Atoll provides an excellent example of how military operations can be compatible with the ecosystem and both can thrive together successfully.”

Thermal treatment of dioxin-contaminated soil from SWMU No. 2 (Former Herbicide Orange Storage Area) was completed on March 21, 2004. A total of approximately 19,560 tons of impacted soil was successfully treated and backfilled in SWMU No. 2. Revegetation of the SWMU No. 2 area was undertaken and completed during the month of April 2004.

DOI gave the Air Force formal notice in a letter dated April 29, 2004 that they were terminating the 1976 MOA which gave DOI jurisdiction and responsibility for natural resources at Johnston Atoll and DoD jurisdiction and responsibility for human residents and visitors (DOI 2004).

Demolition, decommissioning, and wildlife hazard mitigation activities on Johnston Island were performed from December 2003 to mid-June 2004. With the exception of the decommissioned bunkers and the JOC (Facility No. 20), and the Tide Gauge House (Facility No. 108), which was retained by the National Oceanic and Atmospheric Administration, all buildings on Johnston Atoll have been demolished (CH2M Hill 2005).

On June 15, 2004, all demolition, decommissioning, and wildlife hazard mitigation actions performed by the Air Force at Johnston Atoll were completed. The flag was lowered for the last time and all remaining Air Force and CH2M Hill personnel departed on the last C-130 to land at Johnston Island. An era of DoD missions at Johnston Atoll has come to an end.

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