

**UNITED STATES AIR FORCE**  
**GROUND ACCIDENT INVESTIGATION**  
**BOARD REPORT**



**Hazardous Materials Storage Building**  
**18TH LOGISTICS READINESS SQUADRON**  
**18TH WING**  
**KADENA AIR BASE, JAPAN**



**TYPE OF ACCIDENT: FIRE**  
**LOCATION: BUILDING 3150, KADENA AIR BASE, JAPAN**  
**DATE OF ACCIDENT: 22 JUNE 2020**  
**BOARD PRESIDENT: COLONEL DOMINIC A. SETKA, USAF**  
**Conducted IAW Air Force Instruction 51-307**




DEPARTMENT OF THE AIR FORCE  
PACIFIC AIR FORCES

JAN 07 2021

**ACTION OF THE CONVENING AUTHORITY**

The report of the ground accident investigation board, conducted under the provisions of AFI 51-307, *Aerospace and Ground Accident Investigations*, that investigated the 22 June 2020 Class A mishap occurring on Kadena Air Base, Japan, involving a fire in the Hazardous Material Storage area, building 3150, complies with applicable regulatory and statutory guidance and, on that basis, is approved.

  
JON T. THOMAS  
Lieutenant General, USAF  
Deputy Commander

**EXECUTIVE SUMMARY  
UNITED STATES AIR FORCE  
GROUND ACCIDENT INVESTIGATION**

**Hazardous Materials Storage Building Fire  
Kadena Air Base, Japan  
22 June 2020**

On Monday, 22 June 2020, at approximately 0852 local time, a fire occurred at an 18th Logistics Readiness Squadron (LRS) hazardous materials storage building (MB), building 3150, Kadena Air Base, Japan. When the fire started, five Airmen from the 18th Civil Engineer Squadron Readiness and Emergency Management (EM) Flight, operating in two two-person teams with one team lead, were repackaging calcium hypochlorite (CH) into polycarbonate (plastic) and metal barrels for transportation to a hazardous waste disposal facility. The CH, also known as bleaching powder, has a strong oxidizing potential, which can make the chemical unstable when exposed to high heat and humidity. Approximately 90 minutes into the operation, an EM team member felt heat radiating from a pallet of CH in the southeast corner of the MB. Within minutes, the CH in the corner of the MB began to smoke and flames were observed near the southeast corner of the MB shortly after the EM team evacuated the building.

Fire crews arrived on-scene within two minutes of the fire starting, coordinated with Security Forces to establish a cordon, and began to attack the fire with water. The fire burned for approximately four and a half hours, ultimately destroying the MB and the contents inside and nearby with an estimated government loss of approximately \$2.6 million. The 18 LRS used the MB to store a variety of hazardous materials to include the 785 boxes (33,859 pounds) of CH. The environmental conditions, high heat and humidity, in the MB did not meet the recommended guidance for safely storing CH. Over several months, the CH boxes and plastic packaging deteriorated to the point where boxes on the pallets toppled over, packages ruptured, and loose CH granules accumulated on the MB floor.

The large smoke plume from the fire led to the evacuation of portions of the installation across an area larger than three square kilometers for approximately four hours. Although CH can release toxic chlorine gases when heated, repeated chemical test kit sampling of the smoke plume by bioenvironmental teams detected no traceable amounts of chlorine. The evacuations necessitated an airfield closure that lasted approximately one hour and 40 minutes, resulting in three aircraft (two military and one civilian) diverting to alternate military and civilian airfields. While there were no fatalities, 115 U.S. personnel (military, civilian, dependent, and retiree) sought medical care for smoke-related injuries. Only one patient, an active-duty U.S. Air Force member, was admitted to the hospital and discharged the following day with no enduring injury or disability. Additionally, five Japanese National Master Labor Contract employees who work on the installation submitted injury reports to the Okinawa Defense Bureau.

**SUMMARY OF FACTS**  
**Hazardous Materials Storage Building Fire**  
**Kadena Air Base, Japan**  
**22 June 2020**

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## ACRONYMS AND ABBREVIATIONS

A1C	Airman First Class	JEGS	Japan Environmental Governing Standards
AB	Air Base	JN	Japanese National
AFI	Air Force Instruction	KAB	Kadena Air Base
AFJMAN	Air Force Joint Manual	L	Local
AFMAN	Air Force Manual	LRs	Logistics Readiness Squadron
BDOC	Base Defense Operations Center	MAJCOM	Major Command
BE	Bioenvironmental	MB	Mishap Building
CAA	Chief of Asset Accountability	MH1	Materials Handler #1
CDS	Civil Defense Simultest	MH2	Materials Handler #2
CEG	Civil Engineer Group	MH3	Materials Handler #3
CES	Civil Engineer Squadron	MPH	Miles per Hour
CEX	Civil Engineer Emergency Response	MT	Mishap Team
CFT	Cross-Functional Team	MTF	Medical Treatment Facility
Ch.	Chapter	MW1	Mishap Witness #1
CH	Calcium Hypochlorite	MW2	Mishap Witness #2
CMS	Chip Measurement System	MW3	Mishap Witness #3
DoD	Department of Defense	MW4	Mishap Witness #4
EM	Emergency Management	MW5	Mishap Witness #5
EMS	Environmental Management System	MXG	Maintenance Group
EOC	Emergency Operations Center	NCOIC	Noncommissioned Officer In Charge
ESOHC	Environmental, Safety and Occupational, Health Council	No.	Number
ET1	Entry Team #1	PACAF	Pacific Air Forces
ET2	Entry Team #2	PARA	Paragraph
F	Fahrenheit	pH	Potential of Hydrogen
FD	Fire Department	PH	Public Health
FP	Fire Prevention	PPE	Personal Protective Equipment
FSS	Force Support Squadron	SCBA	Self-Contained Breathing Apparatus
GAIB	Ground Accident Investigation Board	SDS	Safety Data Sheet
HAZMART	Hazardous Materials Pharmacy	SF	Security Forces
HAZMAT	Hazardous Materials	SSgt	Staff Sergeant
HMMP	Hazardous Materials Management Program	TSgt	Technical Sergeant
HMPM	Hazardous Materials Program Manager	U.S.	United States
IAW	In Accordance With	USAF	United States Air Force
IC	Incident Commander	USNHO	U.S. Naval Hospital Okinawa
IHWPM	Installation Hazardous Waste Program Manager	WG	Wing

The above list was compiled from the Summary of Facts, the Index of Tabs, and Witness Testimony (Tab R and Tab V).

## SUMMARY OF FACTS

### 1. AUTHORITY AND PURPOSE

#### a. Authority

On 16 July 2020, Lieutenant General Jon T. Thomas, Deputy Commander, Pacific Air Forces (PACAF), appointed Colonel Dominic A. Setka to conduct a ground accident investigation for a fire that occurred on 22 June 2020 at Building 3150, a hazardous materials (HAZMAT) storage building (the Mishap Building or MB), Kadena Air Base (KAB), Okinawa, Japan. (Tab Y-1 to Y-2) The investigation was conducted at KAB, Japan, from 29 July 2020 through 26 August 2020. Lieutenant General Thomas also appointed the following board members: a Captain Legal Advisor, a Senior Master Sergeant Fire Protection and Prevention Specialist, a Master Sergeant Materiel Management Specialist, and a Staff Sergeant Recorder. (Tab Y-1)

#### b. Purpose

In accordance with AFI 51-307, *Aerospace and Ground Accident Investigations*, this Ground Accident Investigation Board conducted a legal investigation to inquire into all the facts and circumstances surrounding this Air Force ground accident, prepare a publicly releasable report, and obtain and preserve all available evidence for use in litigation, claims, disciplinary action, and adverse administrative action.

### 2. ACCIDENT SUMMARY

At around 0630 local time (L) on Monday, 22 June 2020, Mishap Witnesses 1-5 (MW1, MW2, MW3, MW4, and MW5, respectively), all members of the 18th Civil Engineer Squadron (CES) Readiness and Emergency Management (EM) Flight, arrived at the MB to repackage calcium hypochlorite (CH) for safe transportation to a hazardous waste management facility. (Tab R-63, R-80, R-93, R-99, and R-127) Working in teams of two, MW2, MW3, MW4, and MW5 entered the MB, removing CH from its tattered packaging and placing it in polycarbonate (plastic) and metal barrels. (Tab R-63) The 18 Logistics Readiness Squadron (LRS) had not stored the CH in accordance with the manufacturer's recommended guidance for approximately 20 months. (Tabs R-63 and U-7 to U-20) CH was spilling out of its original packaging and was exposed to outside heat and humidity, particularly in the southeast corner of the MB. (Tabs R-99 and V-3.3) At approximately 0852L, CH in the southeast corner of the MB started to radiate heat. (Tabs R-63 and V-3.3) Within minutes, the CH in that corner began smoking and soon started a fire. (Tabs R-63 and V-3.3)

The fire ultimately destroyed the MB, everything stored within it, and any equipment affixed to the MB before responding personnel could extinguish the flames, resulting in an estimated government loss of approximately \$2.6 million. (Tab P-1 to P-2) There were no fatalities. (Tab X-1 to X-11) In total, 115 U.S. personnel (military, civilian, dependent, and retiree) sought medical attention with symptoms due to smoke exposure. (Tab X-1 to X-4 and X-10 to X-11) In addition, five Japanese National (JN) Master Labor Contract (MLC) employees who work on KAB submitted injury reports to the Okinawa Defense Bureau. (Tab X-5 to X-9) The most common

symptoms were eye and throat irritation due to smoke exposure. (Tabs X-1 to X-4, X-10 to X-11, and CC-1) Only one patient, an active-duty U.S. Air Force (USAF) member, was admitted to the hospital and discharged the following day with no enduring injury or disability. (Tab X-1)

### 3. BACKGROUND

#### a. Pacific Air Forces (PACAF)

Headquartered at Joint Base Pearl Harbor-Hickam, PACAF's primary mission is to deliver agile air, space, and cyberspace capabilities in support of United States Indo-Pacific Command's objectives, uniting allies and partners to enhance regional stability and security. (Tab BB-24) PACAF's area of responsibility is home to 60 percent of the world's population in 36 nations spread across 52 percent of the Earth's surface and 16 time zones, with more than 1,000 languages spoken. (Tab BB-24) PACAF maintains a forward presence to help ensure stability in the region. (Tab BB-24) The command has approximately 320 fighter and attack aircraft and 46,000 military and civilian personnel serving in nine major locations and numerous smaller facilities, primarily in Hawaii, Alaska, Japan, Guam and the Republic of Korea. (Tab BB-24)



#### b. Fifth Air Force (5 AF)

Headquartered at Yokota Air Base, Japan, 5 AF's mission is to support the defense of Japan, advance U.S. interests, and promote broader Indo-Pacific security by advancing bilateral air, space and cyberspace capability and interoperability and ensuring USAF forces are ready to respond rapidly to a crisis or contingency. (Tab BB-31 to BB-32) Three wings are aligned under 5 AF: the 18 WG (KAB), the 374th Airlift Wing (Yokota AB), and the 35th Fighter Wing (Misawa AB). (Tab BB-32) The command's three key lines of effort are to synchronize bilateral operations tactically and operationally, strengthen U.S. joint operations to ensure an effective and integrated response to threats, and maintain a "Fight Tonight" readiness while making long-term capability advancements. (Tab BB-34)



#### c. 18th Wing (18 WG)

Located at KAB, Okinawa, Japan, the mission of the 18 WG is to provide premier counter air, air refueling, command and control, and combat search and rescue, a strategic forward base, and strengthen regional alliances through joint, bilateral, and multilateral engagement and ambassadorship. (Tab BB-5) The 18 WG accomplishes this mission through innovative, ready, resilient Airmen; strong relationships with allies and partners; and a world-class strategic forward base. (Tab BB-5) Nearly 15,000 Americans and more than 3,400 Japanese employees and contractors make up Team Kadena. (Tab BB-46)





**d. 18th Mission Support Group (18 MSG)**

The 18 MSG provides combat support for PACAF’s largest installation. (Tab BB-8) The 18 MSG is the largest mission support group in the USAF. (Tab BB-8) The 18 MSG provides security, services, contracting, communications, logistics readiness, and force support for 25,000 joint residents. (Tab BB-8)



**e. 18th Civil Engineer Group (18 CEG)**

The 18 CEG is the largest civil engineer organization in the USAF, comprised of over 1,600 personnel. (Tab BB-9) The 18 CEG oversees all planning, design, construction, sustainment, and protection of 6,800 facilities and related infrastructure to enable decisive air and cyberspace capabilities in support of U.S. interests, the defense of Japan, and peace and stability throughout the Indo-Pacific. (Tab BB-9) Additionally, the group manages the largest military family housing operation in the Department of Defense (DoD) and delivers essential installation services to include environmental management, fire protection, aircraft crash and rescue, explosive ordnance disposal, disaster preparedness, and incident management. (Tab BB-9)



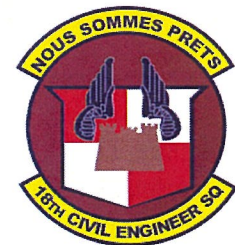
**f. 18th Logistics Readiness Squadron (18 LRS)**

The 18 LRS is the largest logistics readiness squadron in the USAF. (Tab BB-8) The 18 LRS operates four flights to combine the capabilities of deployment and distribution, fuels management, materiel management, and vehicle management under one commander to provide rapid support to USAF warriors across the spectrum of logistics operations. (Tab BB-8) The 18 LRS Materiel Management Flight oversees the Hazardous Materials Pharmacy (HAZMART). (BB-10)



**g. 18th Civil Engineer Squadron (18 CES)**

The 18 CES operates four flights that undertake the daily maintenance and recover the installation from natural or man-made disasters, while training with their joint and bilateral partners. (Tab BB-9) The Operations flight sustains infrastructure and over 5,000 facilities, providing 24/7 customer service including: response to utility outages, typhoon preparation and recovery, and pest management. (Tab BB-9) The Fire and Emergency Services Flight responds to 4,000 emergency calls a year and manages the scene during fire, medical, rescue, or environmental emergencies on the installation. (Tab BB-9) The Explosive Ordnance Disposal Flight responds to an average of 45 munitions-related incidents and accidents per year to eliminate the threats of damaged aircraft countermeasures, WWII munitions, and suspected improvised explosive devices. (Tab BB-9) The Readiness and EM Flight assumes the role of the installation’s emergency



manager. (Tab BB-9) The flight provides preparedness and response capabilities in support of chemical, biological, radiological, nuclear and high-yield explosive incidents, as well as natural disasters and major accidents. (Tab BB-47)

#### **h. 718th Civil Engineer Squadron (718 CES)**

The 718 CES oversees four flights that provide services to Airmen, Marines, Soldiers, Sailors and their families by providing housing, facilities, and infrastructure across the island of Okinawa. (Tab BB-9) They manage a \$2 billion design and construction portfolio and execute over 150 projects annually for the 18 WG and partners. (Tab BB-9) The Engineering Flight is the largest in the USAF and is responsible for strategic planning/design and large-scale construction on Okinawa. (Tab BB-9) The Housing Flight is the largest joint service housing office in the Department of Defense (DoD) and acts as the executive agent for housing in Okinawa, responsible for 7,820 military family homes and 1,798 dorm rooms. (Tab BB-9) The Asset Accountability Flight is comprised of real property and environmental. (Tab BB-9) Real Property manages support agreements, permits, licenses, and joint-use agreements. (Tab BB-9) Environmental provides expertise to KAB on pollution prevention, stewardship of natural and cultural resources, and tank and hazardous material compliance. (Tab BB-9) The Housing Maintenance Flight, geographically separated across seven installations on Okinawa, is the second largest flight in the CEG. (Tab BB-9)



#### **i. Hazardous Materials Storage Building (MB)**

Located at KAB, Japan, building 3150 had approximately 5,000 square feet of floor space and was placed into service in 1952. (Tab R-7) At the time of the mishap, real property records showed that the 18th Force Support Squadron (FSS) owned the MB; however, in 2015 the 18 WG Space Utilization Board allocated the MB as “swing space” for the 18 LRS HAZMART. (Tab R-7) The 18 LRS had been using the MB to store HAZMAT since at least April 2018. (Tab U-24) The HAZMART Noncommissioned Officer in Charge (MH1) acted as the Facility Manager. (Tab U-40 to U-41) Areas of the MB used to store hazardous materials were not climate-controlled. (Tab V-3.5)



## **4. SEQUENCE OF EVENTS**

### **a. CH Characteristics and Proper Storage**

The CH involved in the mishap was in the form of white granules. (Tab V-3.3) CH is also commonly known as bleaching powder and has the molecular formula  $\text{Ca}(\text{ClO})_2$ . (Tab D-46) The manufacturer’s Safety Data Sheet (SDS) – an industry standard for proper usage, storage, and

disposal of a given substance – identifies CH’s strong oxidizing potential and provides specific safety requirements for the use, handling, storage, and transportation of the chemical. (Tab U-8) CH can be unstable when exposed to high heat and humidity, and should not be dropped or skidded across any surface, since the friction could create heat. (Tab D-52)



**Figure 1:** Photograph taken in August 2019 depicting CH.  
(Tab S-2)

kept under ideal storage conditions, the CH in the MB would have had a shelf life ending in August 2020. (Tab V-7.2)

#### **b. Proper Disposal of CH**

Proper disposal of CH requires precautions to limit the removal of CH from its original airtight packaging and minimize direct exposure to external heat and humidity. (Tab D-139) If CH spills

CH should be stored in an area that is cool, dry, and well ventilated. (Tab U-11) Steps should be taken to prevent entry of moisture into the packaging. (Tab U-13) Prolonged exposure to heat may result in the decomposition of CH and the rupture of the container. (Tab U-11) Storing CH where the average daily temperature exceeds 95° Fahrenheit (F) may result in rapid decomposition of the CH, production of chlorine gases, and heat sufficient to ignite nearby combustible products. (Tab U-11)

While CH itself is not combustible, it is an oxidizer, meaning it is capable of intensifying a fire once started. (Tab U-10 and U-13) Shelf life is the period before a product goes below stated label strength. (Tab U-11) Shelf life can be a fixed amount of time but in conditions that are too hot or too humid, a chemical’s shelf life can be significantly shortened. (Tab U-11) If

from its original packaging and is exposed to heat and moisture, it may “off-gas,” meaning it may emit chlorine gases and create heat. (Tab D-30) In addition, disposal of CH that is no longer in its original airtight packaging requires placing the CH in a clean, dry disposal container, properly marked and labeled. (Tab U-11) Disposal containers made of plastic or metal are recommended. (Tab U-11) The Installation Hazardous Waste Program Manager (IHWPM) recommended that CH, which is hazardous waste, should be placed in a metal barrel, then the metal barrel should be further placed in a plastic barrel (an “overpack”) to ensure safe removal. (Tabs R-3 and V-4.4)

### **c. Actual Storage Conditions**

At Headquarters PACAF’s direction, the 18 CES purchased the CH to fill a shortfall in KAB’s contingency chemical inventory. (Tab R-15) By 4 October 2018, 818 boxes of CH arrived at KAB. (Tab R-35 and R-120) Upon arrival, 18 LRS received the CH and contacted the customer, 18 CES, to sign for the material. (Tab V-6.1 to V-6.2) 18 LRS stored and managed the CH in the MB for 18 CES. (Tab V-4.1 to V-4.2, V-6.1 to V-6.2, V-7.1, and V-12.1) The manufacturer of the CH originally packaged it in 3.75-pound plastic bags placed within larger plastic bags. (Tab V-3.3) The larger plastic bags were placed in cardboard boxes, wrapped in black or clear plastic on the sides, and placed on wooden pallets. (Tab S-7 and S-13) Each pallet of CH contained approximately 396 3.75-pound bags of CH. (Tab CC-24)

On 1 June 2020, after approximately 20 months of storage in the MB, several 18 LRS members noticed the CH boxes on the pallets leaning over and multiple boxes were breaking down. (Tab R-120) By 10 June 2020, several boxes of CH had fallen over on themselves or off of shelves, landing on the concrete floor or other pallets. (Tabs R-120 and S-13) The cardboard packaging and plastic wrapping of the CH pallets had degraded substantially, resulting in holes in the packaging which exposed the CH to heat and moisture. (Tab S-5 to S-7, S-13, and S-16 to S-17)



**Figure 2:** CH packages in MB.  
Photograph taken on 1 June 2020.  
(Tab S-6)



**Figure 3:** CH packages in MB.  
Photograph taken on 1 June 2020.  
(Tab S-17)



**Figure 4:** CH bags coming out of  
packaging in MB. Photograph taken  
on 10 June 2020. (Tab S-13)



**Figure 5:** CH packages in MB on 11  
June 2020 after repackaging of CH  
that day. Lines of CH visible on floor  
of MB (Tab S-7)

The MB had no climate control. (Tab V-1.1) The environmental conditions in the MB, which was not well ventilated, were hot and humid, particularly in the summer months, thus not meeting the recommended storage conditions for CH. (Tabs D-30, R-95, U-1, and W-24) For the years 2010 through 2019, the average daily high temperature at KAB for June was 85° F, for July it was 89° F, and for August it was 89° F. (Tab W-24)

As shown in Figures 2, 3, 4, and 5, by June 2020, the plastic wrapping was frayed and torn, the cardboard boxes were disintegrating, bags containing the CH in the MB were breaking open, and loose CH was visible on the concrete floor of the MB (particularly in Figure 5). (Tab R-99) CH was exposed to hot, humid air, and was left on the floor where it risked being exposed to friction from foot traffic. (Tab R-99)

As depicted in Figure 4, some of the packaging and pallets were in a severe state of disrepair. (Tab S-13) Bags of CH had come completely out of their original cardboard and plastic packaging, leaving their contents vulnerable to the heat and humidity of the outside air. (Tab S-13)

#### **d. 11 June 2020 Incident**

On approximately 1 June 2020, MH1 contacted the 18 CES NCOIC of Emergency Management Operations (MW1) for assistance repackaging the CH stockpile owned by 18 CES at the MB. (Tab R-124) EM sent four Airmen to assist with CH removal on 11 June 2020. (Tab R-99)

At around 0830L on Thursday, 11 June 2020, materials handler two (MH2) and MW5 reported to the MB to dispose of CH. (Tab R-85, R-99, and R-104) The pair intended to inventory the CH and overpack it. (Tab R-85, R-99, and R-104) They wore N95 respiratory masks but because the smell of chlorine was so strong in the MB, they decided to put on additional equipment. (Tab R-99) When MH2 and MW5 went for additional equipment, materials handler three (MH3) and MW2 joined them to help overpack the CH. (Tab R-99) At around 0900L, MH2, MH3, MW2, and MW5 put on self-contained breathing apparatuses (SCBAs) and rubber gloves. (Tab R-85 and R-99)



**Figure 6:** EM member moving CH with SCBA on 11 June 2020 at the MB. (Tab S-18)

They began to overpack the CH and place the torn and degraded cardboard boxes, containing small amounts of CH in plastic garbage bags. (Tab R-99) Some of the CH bags broke during clean-up and spilled their contents on the floor. (Tab R-85) This spillage was placed into the garbage bags with the discarded cardboard boxes. (Tab R-85) Per the recommendation of the IHWPM and SDS, proper disposal of CH requires placing the CH in a clean, dry container. (Tabs R-3 and U-11) The team intended to eventually package the cardboard and traces of CH in overpacks but for the time being moved the garbage bags outside of the MB to make more space inside the MB. (Tab R-99)

Between approximately 1000L and 1030L, CH granules in the garbage bags began to off-gas, emitting gases that slowly filled the garbage bags. (Tab R-104) One garbage bag in particular started to inflate and emit smoke. (Tab R-79) On seeing this, MW3 stopped operations and moved the team away from the smoking garbage bag. (Tab R-79) At 1150L, MW3 called the Fire

Department (FD). (Tabs J-24 and R-79) The FD was on-scene by 1154L and hosed down the garbage bag, stopping the smoke. (Tabs J-23 and R-110)



**Figure 7:** Photograph depicting FD response to 11 June 2020 incident. Photograph shows two garbage bags with CH that had been placed to the south of the MB. (Tab Z-11)

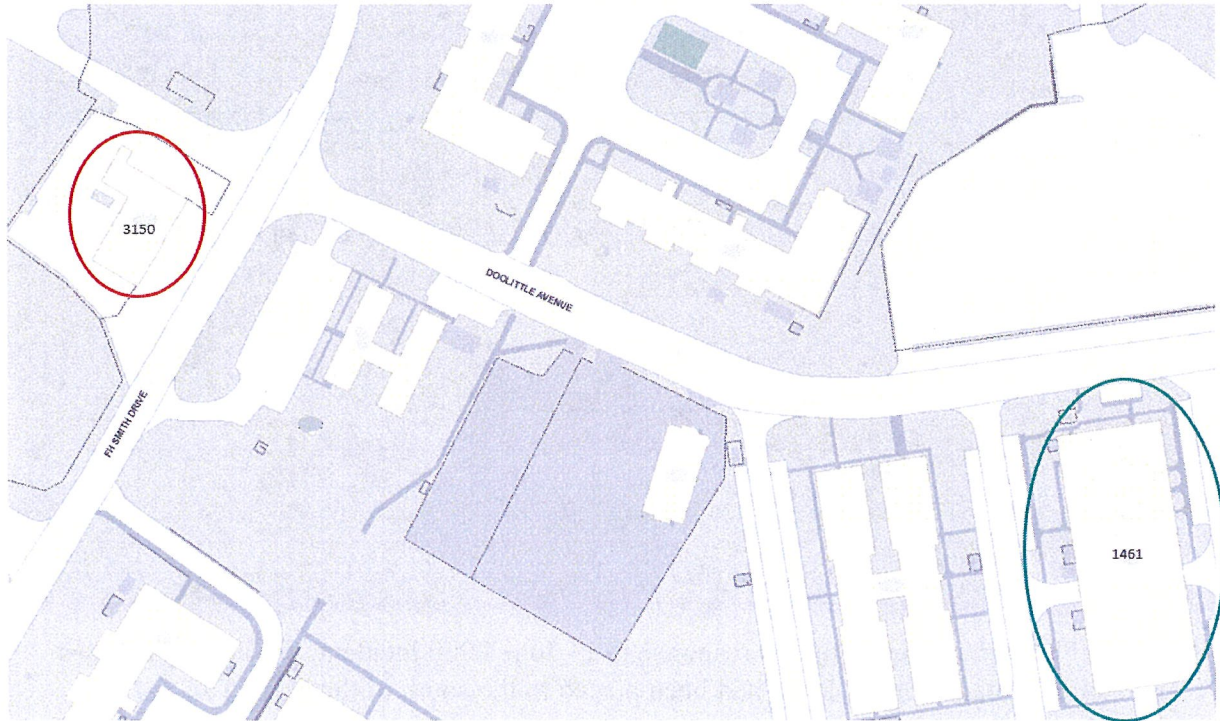
#### **e. 22 June 2020 Mishap**

At approximately 0600L on Monday, 22 June 2020, MW1, MW2, MW3, MW4, and MW5 (Mishap Team or MT) met at building 1461 on KAB for an initial briefing. (Tab R-47) MW1 (the team lead) briefed the MT on the mission and safety measures prior to entering the MB. (Tab R-47) The MT's mission that day was to enter the MB to repackage CH for safe transportation to a hazardous waste management facility. (Tab R-93) MW1 briefed that the MT would wear appropriate personal protective equipment (PPE) before entering the MB. (Tab R-47) In particular, the MT would wear Level B HAZMAT suits, consisting of SCBAs, Tyvek full-body suits, rubber boots, rubber gloves, and all open areas of the suit sealed with chemical tape to prevent skin exposure. (Tab R-47)

MW1 also briefed that he would keep track of the MT's individual times inside the MB, how long they were on SCBA air, and if CH accidentally came in contact with any part of their skin. (Tab R-47) MW1 told the MT to say if they could smell chlorine, feel any effects from handling the CH, or if they had any other issues or symptoms while inside the MB. (Tab R-47) The MT was instructed to stop working and leave the MB once they used approximately two-thirds of the air in their SCBA tank. (Tab R-47) Finally, MW1 planned to monitor the operations of the MT by line of sight while protected within a vehicle parked outside the south entrance of the MB. (Tab R-47)



The MT planned to place all of the CH in the MB into overpacks. (Tab R-93) Thereafter, the overpacks would be transported to the hazardous waste management facility for safe disposal of the CH. (Tab R-47) By 0620L, the MT arrived at the MB to meet MH1. (Tab R-47) The MT intentionally began early in the day to avoid the hottest part of the day. (Tab R-115)

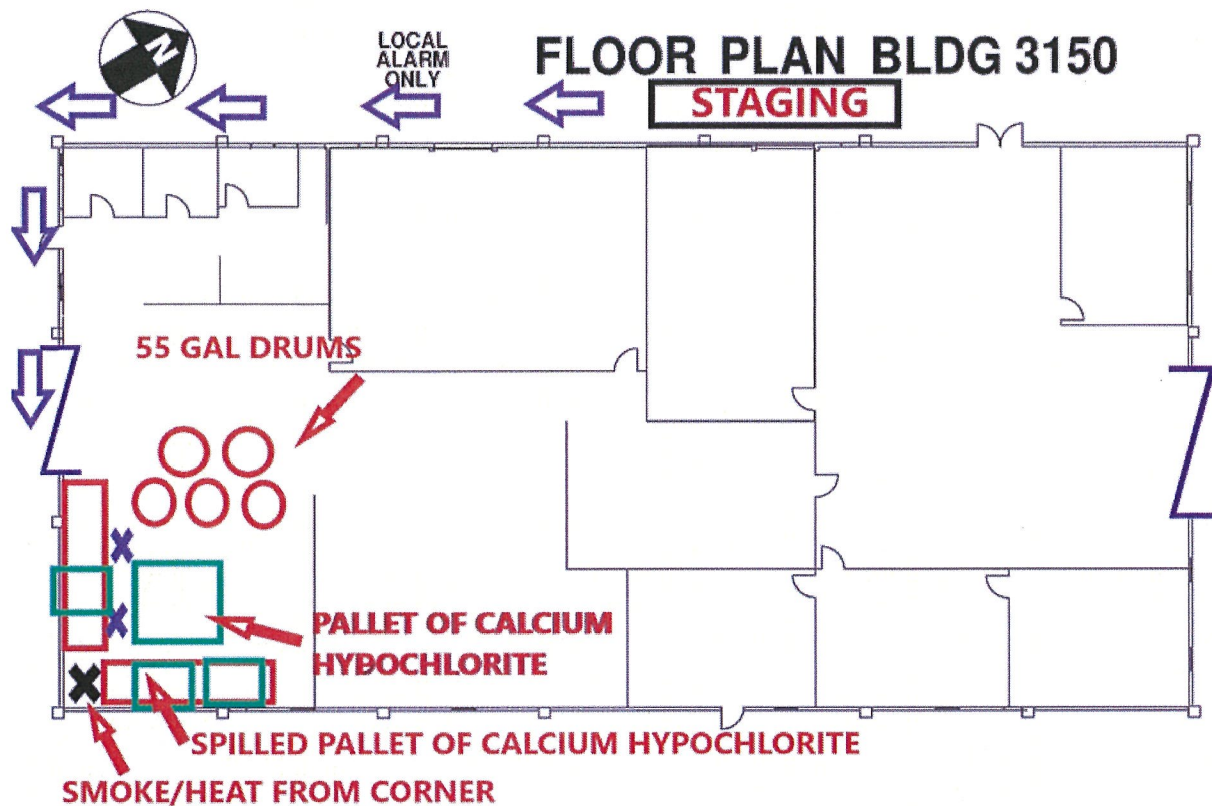


**Figure 8:** Diagram depicts location of initial meeting on 22 June 2020 (building 1461 in green oval) and MB (building 3150 in red oval) (Tab Z-7)

The MT gathered at a staging area outside the north corner of the MB (see Figure 9). (Tab V-3.1 to V-3.2) Entry Team 1 (ET1), consisting of MW2 and MW4, would enter the MB for the first shift while Entry Team 2 (ET2), consisting of MW3 and MW5, waited at the staging area. (Tab V-3.2) After a gear check, ET1 put on their Level B HAZMAT suits and entered the MB through a large rolling door on the south side of the building. (Tab V-3.2) ET1 did not turn on the overhead lights in the MB upon entry. (Tab V-3.5) ET1 began working in the MB at approximately 0707L, moving approximately 286 bags of CH into three plastic barrels and one 55-gallon metal barrel. (Tab R-47 and R-63) Several of the bags of CH were inadvertently breaking open and the cardboard boxes they were in were falling apart to the touch. (Tab R-63)

After approximately 30 minutes of moving CH from its original containers to plastic and metal barrels, ET1 exited the MB at around 0740L. (Tab R-47 and R-63) At around 0745L, MH1 departed the MB and was replaced by a civilian materials handler from 18 LRS. (Tab R-127) Once ET1 took off their Level B HAZMAT suits at the staging area, ET2 put their Level B HAZMAT suits on and began their shift performing the same duties as ET1, except ET2 was instructed by MW1 to remove the CH bags from the large outer bags and place them directly into the barrels.

(Tab R-47) This was done because ET1 reported that single bags were easier to move and would allow for more CH to be stored inside a barrel. (Tab R-47)



**Figure 9:** Floor plan of MB with overlaid descriptions based on witness testimony and diagram. (Tab V-3.1 to V-3.6 and V-5)

ET2 began working in the MB at approximately 0807L, loading bags of CH into plastic and metal barrels. (Tab R-47) By approximately 0834L, ET2 had filled two barrels with approximately 186 bags of CH. (Tab R-47) At some point, MW3 and MW5 heard a popping sound while working but thought the noise came from their air tanks. (Tab R-99)

Pallets of CH were stored on shelves near the south rolling door and on the floor of the MB (see Figure 9). (Tab V-3.3) Some of the CH from a pallet on the east wall of the MB had fallen off the top shelf and its bags were between two shelves in the southeast corner of the MB. (Tab R-99) At approximately 0840L, as ET2 was filling the third barrel, MW3 radioed to MW1 that MW3 and MW5 were feeling heat from the southeast corner of the MB where they were working, and that the heat felt more intense near the pallets of CH. (Tab V-3.3 to V-3.4) MW3 asked if MW5 could also feel the heat and MW5 agreed that they could feel heat on their hands and legs. (Tab V-3.3 to V-3.4) MW3 and MW5 felt like the heat was coming from the dimly lit southeast corner of the room where the CH had fallen from the pallet. (Tab R-80 and Tab R-99)

MW3 asked MW1 what to do about the heat coming from the CH pallets. (Tab R-99) MW1 asked if ET2 could see any smoke. (Tab R-48) MW3 replied that they could not see any smoke at that time. (Tab R-48) MW1 nevertheless directed ET2 to begin exiting the MB. (Tab R-48) While exiting the MB, MW3 stopped only to tighten down the lid on the final barrel the team had been filling. (Tab V-3.4) In that moment just before leaving the MB, MW3 looked up and saw smoke coming from the southeast corner of the MB near the bottom of another pallet that was against the wall. (Tab V-3.4) MW5 also noticed grayish, transparent smoke coming off the pallet on the bottom shelf along the east wall while exiting the MB. (Tab R-93) A fire alarm within the MB was automatically set off by heat at 0853L, alerting the FD of a possible fire. (Tab K-18)

Upon ET2 exiting the MB, MW1 could not see directly inside the MB in the southeast corner where ET2 had been working, but MW1 saw smoke or vapor coming from the vents above the south rolling door. (Tabs R-48 and R-99) Less than a minute thereafter, a tall fire was seen in the southeast corner of the MB near where MW3 had first reported feeling heat. (Tab R-47) At approximately 0853L, MW1 called the FD. (Tab R-48) At 0854L, the FD arrived at the MB but the entire building was already engulfed in thick smoke. (Tabs R-48 and CC-37)



**Figure 10:** Photograph depicting the fire in MB at approximately 0858L on 22 June 2020. (Tab Z-8)

## f. Emergency Response

When FD and Security Forces (SF) responders arrived at the MB, they created an initial cordon around the MB and began fighting the fire with water. (Tabs K-9 and R-26) The on-site Incident Commander (IC) requested a 300-foot cordon around the MB and removal of all bystanders. (Tab R-26) At an Incident Command meeting within 30 minutes of the fire starting, FD, SF, Bioenvironmental (BE), and LRS representatives discussed the potential presence of unknown chemicals in the MB and the expansion of the cordon to 500 feet. (Tab R-26 and R-51)

SF was notified by a representative from BE or EM that the plume might contain hazardous chlorine particulates and that personnel should take all necessary steps to avoid smoke exposure. (Tab R-26) At approximately 0935L, the IC requested a 1,000-foot cordon, which was established by 0955L. (Tab R-26 to R-27) At 0939L, the Installation Commander activated the Emergency Operations Center (EOC) to coordinate information and resources to support the installation's actions during and after the mishap. (Tab CC-1) Around 1000L, SF requested a base-wide message for evacuation of the immediate area affected by the plume. (Tab R-26)



**Figure 11:** Photograph depicting plume drifting northeast from the MB at approximately 0857L on 22 June 2020. (Tab Z-9)

At approximately 1020L, nearby buildings were evacuated. (Tabs J-26 and R-27) Any remaining bystanders were instructed to move to the southeast of the MB to be upwind from the fire. (Tabs R-27 and CC-8) Between approximately 0930L and 1030L, a 2,000-foot cordon downwind was established, a shelter in place for KAB was directed, and all buildings northeast of the MB were evacuated. (Tab R-53)

At 1038L, the first individual reported to medical personnel on-site near the incident for treatment. (Tab X-10) Shortly thereafter, patients started arriving at military medical treatment facilities. (Tab X-1 to X-4) The most common patient symptoms included eye and airway irritation from smoke exposure. (Tab X-1 to X-4) By 1100L, staging, medical treatment, and decontamination areas were fully operational and effectively cordoned to prevent impediment of support to the incident. (Tab R-27)

At 1116L, two representatives from BE entered the cordoned-off mishap scene with two FD personnel to take measurements with two chemical detection kits: the Draeger Civil Defense Simultest (CDS) and the Draeger Chip Measurement System (CMS). (Tab R-139) The first measurements were taken approximately 50 meters downwind from the fire. (Tab R-139) The CDS indicated that chlorine levels fell below the detection limit. (Tab R-139) The CMS also gave a chlorine reading below the detection limit. (Tab R-139) A second measurement using the CMS was taken closer to the fire, approximately 25 meters away from the MB. (Tab R-139) The second measurement also registered below the detection limit. (Tab R-139) Overall, the chemical tests revealed no traceable amounts of chlorine in the air downwind from the MB. (Tab R-136 and R-139) The fire emitted smoke for approximately four and a half hours before being contained. (Tab R-27)

By 1238L, the EOC had ordered the evacuation of an area of approximately three square kilometers on KAB, primarily northeast of the fire in the direction of the smoke plume. (Tab CC-8) By approximately 1325L, the fire was contained. (Tab CC-37)

**g. Search and Rescue**

Not applicable.

**h. Recovery of Remains**

Not applicable.

**i. Injuries, Mission Impact, and Property Damage**

There were no fatalities from the fire. (Tab X-1 to X-11) In total, 115 U.S. personnel (military, civilian, dependent, and retiree) presented with symptoms due to smoke exposure. (Tab X-1 to X-4 and X-10 to X-11) In addition, five JN MLC employees who work on KAB submitted injury reports to the Okinawa Defense Bureau. (Tab X-5 to X-9) The most common symptoms were eye and throat irritation due to smoke exposure. (Tab X-1 to X-11 and Tab CC-1) Only one patient, an active-duty USAF member, was admitted to the hospital and discharged the following day with no enduring injury or disability. (Tab X-1)

The fire ultimately destroyed the MB, everything stored within it, and any equipment affixed to the MB before responding personnel could extinguish the flames, resulting in an estimated government loss of approximately \$2.6 million. (Tab P-1 to P-2)



**Figure 12:** Photograph taken outside MB on 31 July 2020. (Tab Z-1)

Due to areas of the KAB airfield impacted by smoke and the need to evacuate KAB's flight control tower, three aircraft (two military and one civilian) diverted to alternate military and civilian airfields while the FD sought to contain the fire. (Tab CC-2) The KAB airfield was closed for approximately one hour and forty minutes. (Tab CC-2)

## 5. MAINTENANCE

### a. Maintenance Documents

Not applicable.

### b. Maintenance Forms

Not applicable.

### c. Scheduled Inspections

(1) The 18 LRS conducted annual Care of Supply In Storage (COSIS) inspections, in accordance with (IAW) Air Force Joint Manual (AFJMAN) 23-209, *Storage and Handling of Hazardous Materials*, Ch. 4, Para. 4.3, No. 3. and AFI 23-101, *Air Force Materiel Management*, Ch. 5, Para. 5.9.7.1, of their warehouse area in the MB, with the most recent on 15 May 20. (Tab U-24 to U-37) There were no discrepancies noted with the CH, which LRS stored in the MB for 18 CES, since its arrival in October 2018. (Tab U-24 to U-37)



**Figure 13:** Photograph taken inside of MB on 31 July 2020 from south entrance depicting collapsed shelving and remaining metal barrel. (Tab Z-2)

COSIS program actions include performing scheduled inspections of material in storage; properly identifying items; determining the adequacy of the storage environment, preservation, packing, and marking; and arresting all forms of deterioration that will adversely affect the end use of the item. (Tab BB-20) While the material is in storage, until it is shipped to the user, it must be systematically inspected to detect degradation, deterioration, corrosion damage, and other deficiencies caused by improper storage methods, expiring shelf-life, or the material's inherent deterioration characteristics. (Tab BB-12)

(2) 18 CES AMDS/BE was required to conduct a workplace occupational hazard inspection health survey of the 18 LRS HAZMART MB every 48 months IAW AFI 48-145, *Occupational and Environmental Health Program*, Ch. 4, Para. 4.3.2.1.2. (Tab BB-18) On 2 April 2020, BE conducted a telephone and email workplace assessment for the occupational health program, not specific to the MB, to assess workplace hazards and controls. (Tab U-1)

(3) The Fire Prevention (FP) section is required to conduct annual inspections for all facilities IAW AFI 32-2001, *Fire and Emergency Services Program*, Ch. 3, Para. 3.3.2. (Tab BB-13) The last documented inspection on the MB was conducted on 20 April 2018. (Tab U-22)

#### **d. Maintenance Procedures**

A SDS which provides guidance for handling and storage must be kept in the workplace for each hazardous material. (Tab U-5 and U-11 to U-12) The CH stored in the MB had a specific SDS that required temperature control; however, the MB was not temperature controlled as required by the CH's SDS. (Tab U-11 to U-12 and Tab V-1.1) The CH pallets showed severe deterioration of the packaging on 1 June 2020 prior to the CH's listed expiration date of August 2020. (Tabs S-13 and V-4.1)

#### **e. Unscheduled Maintenance**

On 12 August 2019, while the 718 CES Chief of Asset Accountability (CAA) was conducting a facility inspection of building 1462, questions arose regarding the use and ownership of the MB. (Tab R-134) Real property records on 12 August 2019 showed the MB was assigned to 18 FSS, which informed the CAA that the MB had been turned over to 18 LRS. (Tab R-134) After failed attempts in obtaining information from 18 LRS to access the MB, on 13 August 2019 the CAA used bolt cutters to cut the lock on the gate and access the MB, which was unsecured. (Tab R-134) Inside the MB the CAA found gas cylinders, propane bottles, and other unidentifiable items, at which point two MLCs showed up identifying themselves as HAZMART employees who provided supervision contact information. (Tab R-134)

On 13 August 2019, the CAA requested a meeting with the Environmental Hazardous Material Program Manager (EHMPM) at the MB. (Tab R-95) The EHMPM stated all storage of HAZMAT, including the CH, in the MB appeared to be compliant. (Tab R-95) He pointed out the lack of fire suppression system, old metal roof held up by wooden beams, and poor ventilation and lighting. (Tab R-95)

On 14 August 2019 at approximately 1300L, FP met MH1 at the MB for a site visit. (Tab R-28) During the site visit, FP identified discrepancies with hazard identification placards, fire

extinguishers, ceiling tiles, and exit signs. (Tab R-28) In addition, at least one other witness noted a lack of SDSs posted on CH pallets. (Tab R-28) Other concerns were storage of nitrogen cylinders (full and empty), batteries, and refrigerant tanks. (Tab R-28) MH1 explained this was a temporary storage facility. (Tab R-28) No formal write-ups were documented by FP. (Tab R-124) FP later followed up with MH1 and confirmed that some discrepancies were fixed. (Tab R-28) On 16 August 2019 the CAA brought the 718 CES Commander to look over the MB. (Tab R-124)

On 22 August 2019 a team of representatives from EHMPM, FP, BE, EM, and Wing Safety met MH1 at the MB to conduct a site inspection. (Tab R-28) During the walkthrough the team was concerned due to types and amount of material stored in the MB, inadequate ventilation, and improper storage of empty and full cylinders. (Tab R-42) The team discussed if these materials could be stored in the area. (Tab R-42) Batteries were identified as being improperly stored on the ground which was confirmed using the SDS and pointed out to MH1. (Tab R-42) The large amounts of CH were also a concern. (Tab R-42) The team that conducted the site survey did not document the results or any discrepancies. (Tab R-124)

#### **f. Maintenance Personnel and Supervision**

Training records for EM personnel onsite at the MB showed adequate training, certification, and experience with supervision onsite during the mishap. (Tab G-49 to G-241)

## **6. EQUIPMENT, VEHICLES, FACILITIES, AND SYSTEMS**

### **a. Structures and Systems**

#### **(1) Fire Systems**

Built in 1952, the MB was approximately 5,000 square feet and consisted of a concrete slab foundation, exterior concrete block walls, open roof construction with two inch by eight inch wooden rafters, and a tin roof. (Tabs R-7 and R-95) The MB did not have any fire suppression systems installed. (Tabs R-95 and U-21) Fire detection and notification systems were installed and properly transmitted a signal during the mishap. (Tabs J-24 and K-9) At 0853L on 22 June 2020 the FD received initial notification of the event via automatic activation of a heat detector and manual pull station. (Tabs K-18 and CC-49)

#### **(2) Climate Control**

The MB was not climate controlled. (Tab V-1.1)

### **b. Equipment Used**

Not applicable.

### **c. Evaluation and Analysis**

All fire systems were functioning properly on 22 June 2020. (Tabs J-23 and K-18)



## **7. ENVIRONMENTAL CONDITIONS**

### **a. Forecast Weather and Observed Weather**

The forecast weather for KAB on 22 June 2020 was cloudy skies with off and on rain showers expected through most of the day and winds out of the West-Southwest starting at 5-10 miles per hour (mph) increasing to 12-20 mph in the afternoon. (Tab W-3) The observed weather at 0700L was 77° F, 100% humidity and winds out of the West at 6 mph. (Tab W-3) By 0900L, the temperature had increased to 81° F, the humidity decreased to 93% and the winds were out of the Southwest at 8 mph. (Tab W-3) Additionally, there was 0.6 inches of rainfall between 1230L and 1400L. (Tab W-3)

### **b. Other Environmental Conditions**

During the fire, approximately 33,000 pounds of CH stored in the MB acted as an oxidizer which intensified the fire causing a large plume of smoke to form and travel at least 3,500 feet northeast of the MB. (Tabs R-26, R-52, V-4.2 to 4.4 and CC-24) In addition, during firefighting operations, a large quantity of water was required to extinguish the fire, and the run-off flowed to a nearby drain and discharged at Outfall A into the East China Sea. (Figures 14 and 15, and Tabs W-7 to W-8 and Z-10) An outfall is a place where wastewater and stormwater empty into a local body of water. (Tab CC-50)

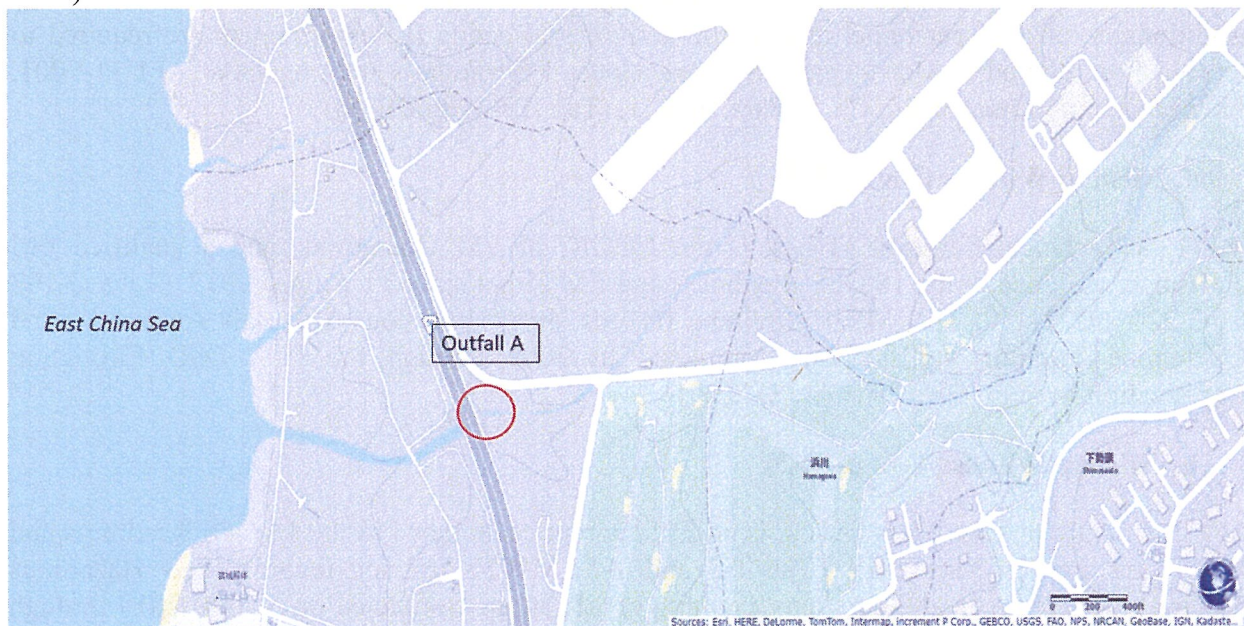


**Figure 14:** Photograph taken during stormwater outfall monitoring on 22 June 2020. (Tab W-23)



**Figure 15:** Photograph taken during stormwater outfall monitoring on 22 June 2020. (Tab W-20)

Three sets of sampling for CH were conducted IAW the 2018 Japan Environmental Governing Standards (JEKS), Ch. 4, at the Outfall A boundary on 25 June 2020, 1 July 2020, and again on 16 July 2020. (Tab W-2, Tab BB-1 to BB-3, and Figure 16) JEKS are the Final Governing Standards for U.S. Forces Japan and were developed IAW DoD Instruction 4715.05, Incorporating Change 1, 5 October 2017, *Environmental Compliance at Installations Outside the United States*, the Status of Forces Agreement, and other applicable international agreements. (Tab BB-1 to BB-3)



**Figure 16:** Outfall A Boundary (Tab Z-10)

The chemical levels in the analysis report from 25 June 2020 and 1 July 2020 fall within acceptable thresholds. (Tab W-2) The analysis from 16 July 2020 revealed an elevation in readings on the potential of hydrogen (pH) scale at 9.30; the acceptable threshold is 9.00. (See Figure 17)

### Ca(ClO)<sub>2</sub> Sampling

Date Sampled	25-Jun-20	1-Jul-20	16-Jul-20	JEGS (2018)
Client Sample ID	20200622 (B3150)	20200622 (B3150) Sampling 2	20200622 (B3150) Sample 3	
Water Temperature	26.90	27.20	N/A	°C
Ambient Temperature	28.00	27.20	N/A	°C
pH	7.90	8.00	9.30	6.0 - 9.0 (discharge to sea areas)
BOD5	4.70	1.90	2.10	45 mg/L (7-day average)
TSS	25.70	4.80	6.30	45 mg/L (7-day average)
COD	29.40	<20.0 ND	98.90	160 mg/L
Total Dissolved Solids	75.00	35.00	39.00	500 mg/L (EPA, DW)
Calcium	11.2 mg/L	6.75 mg/L	6.3 mg/L	RQ 10 lb
Residual Chlorine	Unable to Analyze	Unable to Analyze	0.04 mg/L	RQ 10 lb
Chloride	3.30	5.23	N/A	0 - 100 mg/L (EPA)
Nitrate	0.046	0.05	<0.05 ND	
Nitrite	<0.05 ND	<0.05 ND	<0.05 ND	
Ammonia, et al	0.08	0.07	0.02	100 mg/L (Sum of ammonia, -N X 0.4, nitrate-N, and nitrite-N)

Figure 17: Outfall A Boundary Analysis Results (Tab W-2)

## 8. PERSONNEL QUALIFICATIONS

USAF Materiel Management (USAF Specialty Code (AFSC) 2S0XX) and EM Specialists (AFSC 3E9X1) upon graduation from technical school enter their respective career fields as Apprentices. (Tab BB-35 to BB-44) After a period of on-the-job training lasting a minimum of 12 months, and completion of career field specific courses, they upgrade to Journeyman. (Tab BB-35 to BB-44) Upon promotion to the rank of staff sergeant (SSgt) they enter upgrade training as Craftsman, completing another 12 months of on-the-job training and additional career field specific courses. (Tab BB-35 to BB-44) Both Materiel Management and EM specialists are trained to be knowledgeable and proficient in hazardous material and waste procedures. (Tab BB-35 to BB-44) Additionally, all EM personnel involved in activities affecting the environment are required to receive Environmental Management Systems General Awareness training IAW AFI 31-7001, *Environmental Management*, Ch. 4, Para. 4.3.1.1. (Tab BB-39 to BB-44)

### a. Mishap Witness One (MW1)

MW1, a Technical Sergeant (TSgt), is the NCOIC of EM Operations, and a qualified EM craftsman, assigned to the 18 CES Readiness and EM Flight since 11 August 2017. (Tabs G-107 to G-221 and T-1 to T-2) MW1's training records show Hazardous Materials Awareness and Operations Training certifications completed in 2009 through the U.S. DoD Firefighter Certification System. (Tab G-107 to G-221)

### b. Mishap Witness Two (MW2)

MW2, an Airman First Class (A1C), is an EM apprentice assigned to the 18 CES Readiness and EM Flight since 9 May 2019. (Tab T-3 and T-5) MW2's training records show Hazardous Materials Awareness and Operations Training certifications completed on 5 April 2019 through the U.S. DoD Firefighter Certification System. (Tab T-4)

**c. Mishap Witness Three (MW3)**

MW3, a SSgt, is the NCOIC of Logistics, and a qualified EM journeyman assigned to the 18 CES Readiness and EM Flight since 19 March 2019. (Tabs G-53 to G-106 and T-6) MW3's training records show Hazardous Materials Awareness and Operations Training certifications completed in 2016 through the U.S. DoD Firefighter Certification System. (Tab G-53)

**d. Mishap Witness Four (MW4)**

MW4, a SSgt, is a qualified EM journeyman assigned to the 18 CES Readiness and EM Flight since 8 August 2017. (Tab T-46 and T-90) MW4's training records show Hazardous Materials Awareness and Operations Training certifications completed on 2 September 2015 through the U.S. DoD Firefighter Certification System. (Tab T-45 to T-46)

**e. Mishap Witness Five (MW5)**

MW5, an A1C, is an Emergency Manager Apprentice assigned to the 18 CES Readiness and EM Flight since 11 Oct 2019. (Tab T-93 and T-134)

**f. Materials Handler One (MH1)**

MH1, a TSgt, is the NCOIC of HAZMART, and a qualified Logistics Materiel Manager craftsman assigned to the 18 LRS since 9 October 2017. (Tab T-133 to T-135) Training records show MH1 completing hazardous material storage training on 16 November 2011. (Tab G-227) However, MH1 did not complete the required training, Hazardous Material Management Process (HMMP) Course (WENV-222) through the USAF Institute of Technology Civil Engineer School, after being assigned as the HAZMART Supervisor, a member of the HMMP Team. (Tabs T-135 and BB-21)

**9. MEDICAL FACTORS**

**a. Qualifications**

Not applicable.

**b. Health**

Not applicable.

**c. Injuries and Pathology**

During and after the mishap, 115 patients, including military, civilian, dependent, and retiree beneficiaries, sought medical care at the 18th Medical Group Clinic or United States Naval Hospital Okinawa (USNHO) with eight of them requiring follow-up visits. (Tab X-1 to X-4 and X-10 to X-11) USNHO admitted only one of the patients, an active-duty USAF member who was discharged the next day with no enduring injury or disability. (Tab X-1) The injuries reported by all patients were smoke-related irritation of the eyes and airway. (Tabs G-2, X-1 to X-4, X-10 to X-11, and CC-1) Additionally, five JN MLC employees submitted injury reports via the Labor

Management Organization to the Okinawa Defense Bureau. (Tab X-5 to X-9) Three of the JNs were treated by local medical providers for minor smoke-related injuries, such as sore throat and cough. (Tab X-5 to X-9) Due to the time elapsed and nature of the ground mishap, toxicology screening of military personnel involved in the mishap was deemed unnecessary and not conducted. (Tab G-2)

**d. Lifestyle**

Not applicable.

**10. OPERATIONS AND SUPERVISION**

**a. Operations**

The 18 LRS utilized the MB as an auxiliary storage area for HAZMART operations. (Tab D-9) Typical HAZMAT items stored in the facility included: batteries, insecticides, hydrofluoric acid, and cylinders of propane, oxygen, nitrogen, and argon. (Tab D-153 to D-154) Full-time staff did not occupy the MB, but HAZMART personnel visited the MB at least two times per week to fill customer requirements. (Tab V-1.1)

**b. Supervision**

In August 2019, the CAA could not identify the owning organization for the MB. (Tabs R-7) Real property records identified 18 FSS as the owning organization in August 2019; however, the MB had been transferred improperly to 18 LRS as early as April 2018, according to internal facility inspection records. (Tabs R-134 and U-24)

On 13 August 2019, the EHMPM for KAB assessed the MB IAW AFJMAN 23-209 and stated the HAZMAT, including the CH, appeared to be compliant and stored in compatible fashion. (Tab R-95)

On 22 August 2019, a site survey of the MB was conducted with MH1, the MB's facility manager, by the FD, BE, Ground Safety, and EHMPM. (Tab R-95) Although discrepancies were found during the survey, only verbal corrections were provided to MH1. (Tab R-124) There were no write-ups, after-action reports, or documentation provided. (Tab R-28 and R-124) Over the next few months, MH1 worked to correct some of the discrepancies identified during the site visit by getting proper HAZMAT signage affixed, replacing fire extinguishers, and restoring power to a section of the MB. (Tab R-28 and R-124) MH1 also noted that coordination with the IHWPM to turn in CH for disposal had started during this period but cited the holidays and logistical reasons for delays until March 2020. (Tab R-124)

In March 2020, 18 LRS transported 33 boxes of CH in its original packaging to the hazardous waste collection point. (Tabs R-124 and V-3.3) However, the CH was not disposed of until 29 July 2020 because it did not meet hazardous waste requirements and labeling IAW U.S. Department of Transportation requirements for pickup by the Defense Logistics Agency. (Tab V-4.2) The IHWPM stated that verbal instructions on proper disposal procedures were provided over the phone to MH1. (Tab R-3) MH1 does not recall receiving these instructions. (Tab V-1.2)

Furthermore, MW1 does not recall any clear guidance prior to 22 June 2020 other than packing it for the Hazardous Waste Management facility to dispose of it. (Tab V-2.2)

On 19 June 2020, the HMMP Cross Functional Team (HMMP CFT) met and discussed the storage issue and concern, causing the spill and fire at the MB on 11 June 2020. (Tab CC-14) IAW AFMAN 32-7002, *Environmental Compliance and Pollution Prevention* the HMMP CFT is comprised of required and advisory members from various organizations and established and overseen by the Installation Environmental, Safety and Occupational, Health Council (ESOHC). (Tab CC-13) The required members are 18 CEG, 718 CES Environmental, Wg Safety, BE, 18 LRS HAZMART, FD, Judge Advocate; the advisory members are 18th Contracting Squadron, 18th Maintenance Group (18 MXG), Public Health (PH), and Public Affairs (PA). (Tab CC-13) All required and advisory members attended the meeting except: 18 CEG, 18 MXG, PH, and PA. (Tab CC-23) No follow-up actions were required and EM personnel were not present or required to be present at the meeting according to the meeting minutes. (Tab CC-23)

On 22 June 2020 MW1 took extra precautions with the ET's PPE and directed the wear of HAZMAT Level-B suits for the operation because of the fire and HAZMAT events that transpired on 11 June 2020. (Tab R-47) Prior to entering the facility, MW1 briefed ET1 and ET2 on the objective and safety procedures. (Tab R-47) The safety procedures included instructions on minimizing direct contact with the CH and informing MW1 immediately if the ET's could smell CH through the SCBA or feel any effects of CH through their PPE. (Tab R-47) MW1 also maintained radio communications and visually monitored both teams by line of sight. (Tab R-47)

## **11. GOVERNING DIRECTIVES AND PUBLICATIONS**

### **a. Publicly Available Directives and Publications Relevant to the Mishap**

- (1) AFI 23-101, *Air Force Materiel Management*, 12 December 2016
- (2) AFI 23-209, *Storage and Handling of Hazardous Materials*, 13 January 1999
- (3) AFI 32-2001, *Fire and Emergency Services (F&ES) Program*, 28 September 2018
- (4) AFI 32-7001, *Environmental Management*, 23 August 2019
- (5) AFI 48-145, *Occupational and Environmental Health Program*, 11 July 2018
- (6) AFI 51-307, *Aerospace and Ground Accident Investigations*, 18 March 2019
- (7) AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, 4 February 2020
- (8) AFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 11 December 2018
- (9) Department of Defense (DoD) Instruction 4715.05, Incorporating Change 1, 5 October 2017, *Environmental Compliance at Installations Outside the United States*
- (10) JEGS, *Japan Environmental Governing Standards*, April 2018

### **b. Other Directives and Publications Relevant to the Mishap**

Not applicable.

11 DECEMBER 2020

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DOMINIC A. SETKA, Colonel, USAF  
President, Ground Accident Investigation Board

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Weather And Environment Records and Data Not Included In Tab F .....W  
Statements Of Injury and Death..... X  
Legal Board Appointment Documents ..... Y  
Photographs, Videos, Diagrams, and Animations Not Included In Tab S .....Z  
Not Used .....AA  
Applicable Regulations, Directives, and Other Government Documents ..... BB  
Miscellaneous ..... CC