



US Army Corps
of Engineers
Rock Island District

Defense Environmental Restoration Program
for
Formerly Used Defense Sites
Ordnance and Explosive Waste

Archives Search Report

FINDINGS
for the former

PLANO TRABUCO TARGET AREA

(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

October 1993



**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
for
FORMERLY USED DEFENSE SITES**

FINDINGS

**ORDNANCE AND EXPLOSIVE WASTE
ARCHIVES SEARCH REPORT
FOR
PLANO TRABUCO TARGET AREA
(TEMECULA BOMBING RANGE)
ORANGE COUNTY, CALIFORNIA
PROJECT NUMBER J09CA020901**

October 1993

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EXECUTIVE SUMMARY

The purpose of this report is to present the findings of a records search and site inspection for potential ordnance contamination located at an 1800 acre site, thought to be the Former Temecula Bombing Range. This site is located on the Plano Trabuco (also known as Trabuco Mesa) in Rancho Santa Margarita, Orange County, California, far removed and completely unassociated with the town of Temecula, California. The 1800 acre range lies within the partially completed planned community of Rancho Santa Margarita, which is located east of Mission Viejo and south of the O'Neill Regional Park.

This investigation was performed by ammunition specialists from the U. S. Army Defense Ammunition Center and School located in Savanna, Illinois, and ammunition specialists from the Rock Island District Corps of Engineers, Rock Island, Illinois. Engineering oversight was provided by the Rock Island District.

The 1800 acre site investigated, per the Inventory Project Report (INPR), was taken by condemnation in a petition filed by the Secretary of the Navy, dated February 21, 1944. The Executive Order, granting immediate possession, was to establish a bombing/target range in connection with the Marine Corps Air Station at El Toro, California. A lease was later negotiated which reverted back to the date of condemnation. The acreage was utilized until 1949, at which time the lease was modified to include only 503 acres. In 1956, this lease was relinquished and the land reverted back to its original use - farm/graze land, until development of the area began in 1984.

During the process of land development for the Rancho Santa Margarita Planned Community, several removal actions were performed by EOD of OEW that had been gathered throughout the area. Eventually, when quantities became too great for removal/support by EOD, the Santa Margarita Company began steps to remove the OEW on their own. Several tons of OEW that were detected and gathered by hand were buried within the development under 20 feet of soil in the golf course area (8th hole). Approximately 61 tons more were transported to a remote location off-site (Chiquita Canyon) and stockpiled. This stockpile was ultimately removed during October and November of 1991 under COE Contract Number DACA 87-91-D-0010.

The historical literature search revealed that the 1800 acres addressed in this ASR was possibly not the Temecula Bombing Range, but rather, the Plano Trabuco Target Area. While historical documentation did use various names for this 1800 acre site, the only documentation located that

used the name "Temecula" contained information and dates inconsistent with the known history of the 1800 acre site addressed in this ASR. The actual Temecula Bombing Range is believed to be located in Riverside County, California, and referred to as "Target No. 107", used by Permit of the Vail Company to the United States of America.

The site visit was conducted 1-5 March 1993, to visually verify the presence, or non-presence, of ordnance and explosive waste (OEW). Based on the records accumulated during the records search, particular attention was directed toward developing disbursement patterns in order to limit/expand particular areas of known or possible OEW contamination. The site inspection revealed no visual ordnance or component parts.

Personal interviews included the General Superintendent of the Santa Margarita Company, the current developers of the area. His actual involvement in site operations enabled him to give the approximate locations of OEW uncovered throughout the development of the entire 1800 acre site. His account clearly indicates that the target source used by the pilots was an adobe hut (a current historical marker) located in the south-west section of the site, with disbursement lying predominantly in the southern half of the 1800 acres.

The types of ordnance that have been recovered include 3 lb., 4 lb., and 25 lb. practice bombs (generically referred to as "target markers") and 2.25", 3.5", and 5" rockets.

While numerous quantities of OEW have been recovered over the years, there have been no reports of injuries or deaths.

There is no evidence that any structures or facilities were built/used by the Navy or Marine Corps during the use of this site. Consequently, there are no recommendations for further investigation in areas other than OEW.

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1. INTRODUCTION

a. **Subject and Purpose**

(1) This report presents the findings of an historical records search and site inspection for ordnance and explosive waste (OEW) presence located at the Former Plano Trabuco Target Area (originally thought to be Temecula Bombing Range) at Rancho Santa Margarita, California (see Plate 1 for general location map). The investigation was performed under the authority of the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP FUDS).

(2) The purpose of this investigation was to characterize the site for potential OEW contamination, to include chemical surety/warfare material and conventional munitions with chemical fillers, i.e., CN, colored smoke, etc. This was achieved through thorough evaluation of all historical records, interviews, and the on-site visual inspection results.

b. **Scope**

(1) The investigation focused on 1800 acres of land that was used as the Plano Trabuco Target Area for practice dive bombing by the Marine Corps and Army Air Corps.

(2) This report presents the site history, site description, real estate ownership information, and confirmed ordnance presence (prior to and after site closure), based on available records, interviews, and the site inspection. It further provides a complete evaluation of all information to assess current day potential ordnance contamination, where actual ordnance presence has not been confirmed.

2. PREVIOUS INVESTIGATIONS

a. **Preliminary Assessment**

(1) A Preliminary Assessment of the Plano Trabuco Target Area was conducted under the Defense Environmental Restoration Program, Formerly Used Defense Sites (DERP FUDS) by the U.S. Army Corps of Engineers, Los Angeles District (Ref B-7). At that time, the Findings and Determination of Eligibility (FDE), dated 1 Feb 1991, concluded that the 1800 acre site located on Plano Trabuco in Orange County, California, had been formerly used by the U.S. Marine Corps (see document E-1).

(2) While the actual acreage addressed in the FDE was accurate, the equation of this acreage to the Temecula Bombing Range appears to have been inaccurate, (a subject that will be addressed in Section 4 of this report).

(3) This investigation concluded that there were eligible categories under the DERP FUDS program. Due to the fact that the site was found to have been used as a practice target range for Marine Corps pilots (and possibly Army Air Corps pilots), an Ordnance and Explosive Waste (OEW) project was recommended; DERP FUDS OEW Project Number J09CA020901, the principle subject of this report (see document E-2 and TABLE 2-1).

Project Number	DERP Category	Present Phase	Comments	Location
-	CON/HTRW	-	None Recommended	-
-	HTRW	-	None Recommended	-
-	BD/DR	-	None Recommended	-
J09CA020901	OEW	SI	Ordnance or explosive contamination	Entire 1800 Acres (See Plate 1)

b. **Interim Removal Project**

(1) An interim removal of stockpiled OEW was conducted by IT Corporation under Contract No. DACA 87-91-D-0010 (Ref B-8). OEW that had been removed from the 1800

acre site by developers was transported to an off-site location (Chiquita Canyon). This project involved the removal of the approximately 61 tons of OEW from the canyon. The removal began 1 October 1991 and completed 5 November 1991, with the final report dated 15 January 1992 (see document E-3).

3. SITE DESCRIPTION.

a. **Existing Land Usage**

(1) The Plano Trabuco Target Area consisted of approximately 1800 acres of land just east of Mission Viejo, California, in Orange County. The facility covered portions of Sections 10, 11, 14, 15, 21, 22, 23, 27, 28, 32, and 33, Township 6 South, Range 7 West, and portions of Sections 4 and 5, Township 7 South, Range 7 West of the San Bernardino Base and Meridian (see Plate 1).

(2) The entire 1800 acres of land lies within a 5,000 acre area that is currently owned by the O'Neill family, with its operational entity under the Santa Margarita Company. This company is currently amidst the development phase of a planned community called Rancho Santa Margarita. TABLE 3-1 and Plate 2 represent the current land usage/status of the area.

TABLE 3-1 CURRENT/PLANNED LAND USAGE			
AREA USAGE	ACREAGE	CURRENT USAGE	PLANNED USAGE
Residential	813	6,000+ Units 17,000+ Residents	15,000+ Units 40,000 Residents
Open Space	135	-	-
Business Park	450	30 Lots	113 Lots
Town Center	270	25 Units	2,400 Units
Recreation	132	Golf Course	-
TOTAL	1800		

b. Meteorological Data

(1) The region lies in the semi-permanent high pressure zone of the eastern Pacific. The overall climate is mild, tempered by cool sea breezes and interrupted infrequently by periods of extremely hot weather, winter storms, or the Santa Ana winds. Daytime breezes flow easterly from the coastal area, west of the site. While these conditions result in some variety of weather conditions, temperature and humidity are usually well within the limits of human comfort.

(2) During periods of high temperatures, the relative humidity is usually below normal. Average winter temperatures (November - April) generally range between 45 degrees Fahrenheit and 65 degrees Fahrenheit, with a record low of 28 degrees Fahrenheit being recorded in January of 1949. The average summer temperatures (May - October) range from 60 degrees Fahrenheit to 80 degrees Fahrenheit, with a record high of 106 degrees recorded in June of 1973.

(3) While annual precipitation may vary markedly in monthly and seasonal totals, most rainfall occurs during the winter months, with 85 percent of the average annual total of 14 inches falling from November through March. The average monthly winter rainfall is 2.28 inches, while the monthly average for summer is only .18 inches. Extreme variance in these monthly and annual totals are not uncommon. Monthly totals of 0 inches have been recorded many times, with a monthly high of 14.94 inches recorded in January of 1969, and an annual high of 31.28 inches recorded in 1941. While thunderstorms are infrequent, occasional flash flooding can be expected in the canyon areas.

(4) The average wind speeds are rather low. However, in the fall, winter, and early spring months, occasional descending (Santa Ana) winds coming from the north over ridges and through passes may reach speeds of 35 to 50 miles per hour, and may pick up/carry considerable amounts of dust (Ref B-2 and B-3).

c. Geology and Soils

(1) Regional Geology

(a) The region is generally underlain at depth by a sequence of marine sedimentary rocks ranging in age from Eocene to Middle Miocene. Capping the rock units are river terrace deposits of late Quaternary age. These terrace materials represent ancient river floodplain sediments which were deposited when sea level was at a higher elevation than present. Occupying the streambed and canyon floor areas are recent alluvial and colluvial

sediments representing the current floodplain depositional cycle.

(b) Outcroppings of three bedrock units that have been mapped are: Topanga, Vaqueros, and Sespe Formations. The Topanga Formation consists of a pale tan to yellow-brown silty sandstone with minor quantities of siltstone. Slope stability within the Topanga Formation is generally good, except in siltstone or interbedded siltstone and easily crumbled sandstone beds, where slumping and bedding plane slides are fairly common.

(c) The Vaqueros Formation consists of a pale gray to pale yellow-brown silty fine to medium grained massive sandstone. Occasional white to very pale gray ash beds were noted in exposures. Materials within the Vaqueros Formation are susceptible to landsliding and generally occur on siltstone strata.

(d) The Sespe Formation is a non-marine and marine interbedded reddish-brown to gray sandstone, silty sandstone with minor quantities of interbedded siltstone, and mudstone. Slope stability is moderately high overall, but commonly poor in clayey and silty horizons.

(e) Surficial deposits include river terrace deposits, alluvium, colluvium, and artificial fill. These materials represent ancient floodplane materials deposited by previous Arroyo Trabuco and Tijeras Canyon stream activity and generally consist of brown to reddish-brown and gray silty sands with frequent gravel and cobble fractions. Slope stability is rated moderately good. The engineering properties of these bedrock and surficial materials varies considerably, however, the Vaqueros formation bedrock has been indicated as susceptible to landsliding (Ref B-2, B-6, and B-9).

(2) Site Geology

(a) The 1800 acre site is composed predominantly of Vaqueros Formation Bedrock. Surficial deposits found within the site include river terrace alluvium, recent alluvium, and colluvium (see document L-1).

(b) Existing landslide areas are evidenced predominantly within the southeastern portion of the site, (near the golf course area) and in the Island Pasture area.

(c) The predominant local seismic hazard is the Cristianitos Fault Zone. The fault and a related subparallel splinter trace occur through the southern end of the site. The Cristianitos Fault Zone generally is considered inactive, though the issue is yet to be completely resolved. Several other faults (also considered

inactive) exist in proximity to the area. Liquefaction hazard potential, if present at all, is considered most likely within the active Arroyo Trabuco and Tijeras Canyon drainage courses (see document L-2).

(3) Site Soils

(a) Surface soil units that have been identified on site belong to the Bosanko, Botella, Calleguas, Cieneba, Modjeska, and Myford Series (see document L-3).

(b) The predominantly occurring soil within the plane falls into the Modjeska Series. It ranges from reddish brown near the surface, to pale or yellowish brown at greater depths. It is generally a gravelly, sandy loam occurring at depths up to 71 inches, with surface and subsurface structure ranging from 30 percent to 35 percent cobbles, and 20 percent to 25 percent pebbles. There is generally a low shrink-swell potential. If the soil is bare, the runoff is slow to medium and the erosion hazard is slight to moderate. Intermittent areas of Myford Series soils occurring within the Modjeska soils are pale brown to pinkish gray sandy loam at surface level; brown sandy clay loam at subsurface and substratum levels. They represent very slow permeability characteristics, and medium/moderate runoff/erosion hazards.

(c) The Island Pasture, lying on the south western portion of the site, consists predominantly of Bosanko clay soils, with high shrink-swell potential. Permeability is slow, with runoff ranging from medium to high. Consequently, the erosion hazard ranges from moderate to high. The outer perimeters of the pasture area consist of Botella Series soils consisting of grayish brown silty clay loam, with a hard, friable, sticky texture. Runoff/erosion of this area is medium/moderate. However, the inner most portion of the pasture area consists of Calleguas clay loam, with slopes of 50 percent to 75 percent. The soil is a pale brown clay loam and shale clay loam 15 inches thick. Underlying material is soft fractured shale with lime coatings. With a rapid/high runoff/erosion hazard, this location is highly susceptible to land slides.

(d) The outer perimeters of the site, the area where the suspected target lies, consist largely of Cieneba sandy loam with 30 percent to 75 percent slopes. This layer is only 5 inches to 15 inches deep over bedrock. Geologic erosion is active, and small landslides are common.

d. Hydrology

(1) The Plano Trabuco area is located within the upper western portions of the San Juan Creek Watershed. The principal streams within this watershed are the San Juan Creek, Arroyo Trabuco and the Oso Creek, all of which rise in the Santa Ana Mountains and flow generally west and south to their confluence near San Juan Capistrano, and ultimately to the Pacific Ocean. The study area is situated within the Arroyo Trabuco drainage area, with the Arroyo Trabuco and its tributary, Tijeras Canyon, forming the primary drainage course through the study area. The three-mile reach of Arroyo Trabuco in the vicinity of its Tijeras Canyon confluence is subject to rising groundwater and, therefore, usually has year-round stream flow. Surface drainage patterns within the area generally follow the existing natural topography, directly to both the Arroyo and Tijeras Canyon stream courses.

(2) Groundwater within the site occurs primarily in the water-bearing alluvial and colluvial deposits within, and adjacent to, the Arroyo Trabuco and Tijeras stream courses. Surface runoff flowing within these streams is the primary source of recharge to the underlying basin aquifers. The groundwater within the basin is of variable quality. Total Dissolved Solids (TDS) concentrations are indicated to range from 250 to 500 mg/l in the upper areas, and from 300 to 1250 mg/l in the downstream areas (Ref B-2).

e. Cultural Resources

(1) While the general area does contain several species of vegetation that are considered sensitive, they occur in very limited quantities, if at all, on the actual 1800 acre study area. However, the Catalina mariposa lily, designated rare in the Inventory of Rare and Endangered Vascular Plants of California, occurs on native grassland slopes bordering the site, and occasionally in the sage scrub.

(2) No species of Wildlife designated as rare, endangered, or threatened have been identified in the study area. However, a number of avian species afforded special status by the federal government, state of California, or National Audubon Society are present on site. They are included in TABLE 3-2, Cultural Resources (Ref B-2).

(3) Several documented historic, archaeological, and paleontological sites occur within the study area. These are included in TABLE 3-2 below. It should additionally be noted that, while specific sites have been noted within the area, it is anticipated that other sites may exist that have not yet been documented. Consequently, mitigation by the

Environmental Management Agency (EMA) would be required prior to any intrusive digging.

TABLE 3-2
CULTURAL RESOURCES

Resource Classification	Type	Comment
Wildlife	Golden Eagle	Protected by Federal Bald Eagle Act
	White-tailed Kite	Fully Protected by State of CA
	Prairie Falcon	Federally Designated - Status Uncertain
	Marsh Hawk, Red-Shouldered Hawk, Belted Kingfisher, Kestrel, Cooper's Hawk, Grasshopper Sparrow, Barn Owl, Yellow Warbler, Western Bluebirds	National Audubon Society (blue listed as declining in population)
Vegetation	Catalina Mariposa Lily	Inventory of Rare and Endangered Vascular Plants of CA (Rare)
Historical	Trabuco Adobe Site 876	CA Inventory of Historic Resources; Ruins (Apparent Range Target)
	San Francisco Solano Site 876	CA Inventory of Historic Resources; "Portola Campsite" near Adobe Hut
	Unnamed Historic Site	Potential Site for Historic Artifacts
Archaeological/ Paleontological	Various	Orange County EMA; Mitigation Required Prior to Intrusive Measures

4. HISTORICAL ORDNANCE USAGE ON-SITE.

a. **Chronological Site Summary.**

(1) The Plano Trabuco Target Area was used by the Department of the Navy (United States Marine Corps) during WW II as a practice bombing range. The Target Area was located in Orange County, California, and is currently owned by the O'Neill Family with operational entities under the Santa Margarita Company. The Navy/Marine Corps pilots used this site as a practice bombing/target range in conjunction with the Marine Corps Air Station (MCAS), El Toro, California. This target area was established in 1944 and used well into the 1950s (1944-1956). The 1800 acre area of flat plain near Saddleback Mountain, called Plano Trabuco, lies within what is now the 5,000 acre Rancho Santa Margarita Planned Community. It lies 10 miles southeast of El Toro Marine Corps Air Station and 5 miles northeast of Mission Viejo (see document L-4 and Plate 1).

(2) On 21 February 1944, the Secretary of the Navy acquired "1800 acres of land, more or less, situated in the County of Orange, State of California" at Trabuco Mesa by condemnation for military purposes. The order on the petition for immediate possession stated "That the plaintiff United States of America is hereby granted the immediate and exclusive possession of the real property hereinafter described for use by the Navy Department of the United States as a bombing and target range in connection with the United States Marine Corps Air Station at El Toro, California;..." (see document G-1). Later in 1944 a lease agreement was negotiated with the landowner for the period subsequent to 1 July 1944. Thus, an amendment requesting "that the petition in condemnation be amended to state that the estate sought is a term for years ending June 30, 1944." was initiated (see document G-2 and G-3).

(3) In 1945, the United States Government paid landholders and tenants "just compensation" for the condemnation and taking of property, to include crops and crop damages (see documents G-4, G-5, and G-6). A lease was further negotiated for continued use of said land, with renewal to be continued on a yearly basis (see document G-7).

(4) On 1 April 1946, the property was released to the estate of Jerome O'Neill, its original owner, and used by the Navy under lease (see document G-8). In 1949, there was an apparent modification to the lease to reduce the leased area from 1800 acres to 503 acres for government use (see documents F-8, F-9, F-10 and Plate 1).

(5) The Navy (and perhaps the Army Air Corps) used this site as a practice bombing/target area in conjunction with the MCAS until 1956 (Ref B-17 and B-18). At that time, the use of the land was relinquished by the Navy and ultimately returned to its original usage - graze land and farming (see documents H-1 and H-2).

(6) During the years following DOD use, hundreds of practice bombs and target markers were found and stockpiled by individuals that farmed the land. When plans for development of the area were begun in 1984 by the Santa Margarita Company, a joint clearance operation was conducted by the Orange County Hazardous Device Squad (OCHDS) and the El Toro MCAS Explosive Ordnance Disposal (EOD) Unit. Fourteen dump trucks of surface and stockpiled certified inert OEW were removed from the area, and four hundred forty eight suspect items were destroyed (see documents F-11 and F-12).

(7) In 1984, actual development/construction of the Rancho Santa Margarita Planned Community began, encompassing the original 1800 acres of the Former Plano Trabuco Target Area. Today, this area exists as a moderately populated community, with a continually increasing number of businesses, residents, and public facilities (see Plates 1 and 3).

b. Ordnance Related Records Review.

(1) Research efforts began with a thorough review of all reports, newspaper articles, historical documents, and reference material gathered during the archival records search. During this review, an effort was made to focus on areas of potential OEW contamination as described in the Inventory Project Report (INPR) (Ref B-7).

(2) Information gathered and personal interviews with local people in both Rancho Santa Margarita and Olde Towne Temecula, California, leaves some question as to the actual name of this target range. Numerous historical routing slips and letters/memos were uncovered with correspondence discussing "1800 acres of land, more or less" used as a practice target area. While various names were equated to this 1800 acres (all somewhat logical in nature), no documents specifically discussing the 1800 acres ever used the name "Temecula" (see documents F-3, F-4, F-5, and F-9). Additional correspondence was also obtained that could be linked to the 1800 acre site by names used in documents F-3, 4, 5, and 9 (see documents F-6, F-7, F-8, and F-10). The name most frequently used in said documentation is "Plano Trabuco Target Area". Consequently, this is the name that has been used throughout this ASR.

(3) A separate routing slip dated 29 September 1945 and titled "Temecula Targets, Discontinuance of." was located. No correspondence was attached (see document F-1). A second routing slip dated 1 March 1946 and titled "Bombing Target No. 107, Vail Co, Permittor" was also obtained. This slip included attached correspondence which specifically located Target 107 in Riverside County, California (near Temecula). It stated that "restoration (of target area) has been completed." (see document F-2). It is not an absolute that the two documents (F-1 and F-2) are related. However, based on the fact that the decontamination/discontinuance of Plano Trabuco was not addressed until the late 1940s, it does not seem likely that document F-1 was referring to the 1800 acre site addressed in this ASR (see document F-5). Additionally, due to the logical progression of dates on documents F-1 and F-2, and the more rational location for a site called "Temecula Bombing Range" (noting that all persons interviewed had no idea why the subject site was being referred to as Temecula), the apparent conclusion is that the 1800 acre site addressed in this ASR is not Temecula Bombing Range.

(4) Documentation was located indicating the reduction of the 1800 acre site to 503 acres on the southern portion. A memorandum dated 1949, from the Commandant of the Eleventh Naval District stated that "the excess portion of Plano Trabuco Target Area had been cleared of all surface scrap, and requested that arrangements be made for decontamination by screening the area with a mine detector. The District Public Works Officer has attempted, without success, to locate suitable mine detection equipment and qualified operating personnel to determine whether the excess target area was cleared of buried hazardous material." However, documentation was not found to clearly indicate if mine detectors were ever obtained to complete subsurface decontamination (see documents F-6, F-7, F-8, F-9, F-10 and Plate 1).

(5) The search uncovered various newspaper articles (see documents H-1 thru H-3) and documents to verify that large quantities of OEW have been recovered/removed from the former target area. In 1984, the Santa Margarita Company began plans for the construction of a housing development on the former bombing range area. It was during this time that the developer encountered large amounts of OEW at the site, some of which had been stockpiled over the years by farmers utilizing the land. The Orange County Hazardous Device Squad (OCHDS) was contacted. They began making daily responses to the development to pick up the ordnance (see document F-11).

(6) On 16 June 1984, the OCHDS and the El Toro MCAS Explosive Ordnance Disposal (EOD) Unit jointly commenced a surface sweep clearance operation which was

completed on 30 June 1984. Fourteen dump trucks of certified empty ordnance were transported from the site. Four hundred forty eight ordnance items suspected of containing spotting charges were destroyed (see document F-12).

(7) On 30 August 1984, the Executive Vice President of Rancho Mission Viejo, a company affiliated with the Santa Margarita Company, wrote a letter to the MCAS requesting the EOD perform a sub-surface sweep. The MCAS initially agreed until the EOD conducted a Search Effectiveness Probability Study and reported that "to sweep the area with the equipment available at that time, it would take nearly seven years." Using all of the Mk 26 ordnance locators on the West Coast, only 32 percent certification would have been achieved. The MCAS did agree to provide EOD support during all heavy equipment operations. This assistance was provided for approximately 6 weeks to commence on 3 October 1984 (see document F-11).

(8) In May 1985, Rancho Mission Viejo Vice President of Operations wrote to the MCAS requesting assistance in locating any remaining target markers as well as aerial photographs of what they believed was the primary impact area. The MCAS promised to continue to assist the company, noting that over 50,000 pounds of ordnance had already been recovered by their personnel. The El Toro MCAS EOD Unit provided assistance, when requested, and picked up about one to five items from the site on approximately a quarterly basis for the next several years (see document F-11).

(9) In August 1988, the Mission Viejo's Vice President of Operations requested EOD to pick up ordnance at the site (see document F-13). Upon inspection, the officer in charge of the EOD Unit was concerned about the large quantity of ordnance apparently piled up at the site by construction personnel. When the EOD unit was unable to give continued support due to manpower and/or funding restraints, the decision was made by the Rancho Santa Margarita Company to hire a firm, at their own expense, to remove the ordnance. This led to the accumulation of two stockpiles of OEW. One quantity was buried twenty to thirty feet below the surface during grading operations. This location currently exists under the 8th hole of the Tijeras Creek Golf Course (see Photos J-1 and J-7, and Plates 2 and 4). The second quantity (61 tons) was removed from site by hand and transported by truck(s) to a remote location outside the development area - Chiquita Canyon. It was completely fenced in and locked for safety/security (see Plate 2). This stockpile was ultimately removed by IT Corporation in 1991 under contract with the U.S. Army Corps of Engineers, Huntsville Division, Huntsville, Alabama (see document E-3 and Photos K-1 thru K-4).

(10) In addition to the numerous clearances of ordnance that have taken place, information was obtained indicating the procedures followed by the contractors during development of the current Rancho Santa Margarita Community. In an effort to remove any OEW existing in what was determined to be the target area (the southern portion of the site/golf course area), the following procedures were followed:

(a) The soil was turned over and all material 2' - 3' deep was run through a 4" vibrating screen with all OEW being removed. This was done from the most concentrated point out to a limit of approximately a 400' to 500' radius of the target.

(b) The area was walked using metal detectors capable of detecting to a depth of 2'

(c) Notices were/are given out by the developer to residents (old and new) stating the history of the area, the procedures followed during development (as stated above), and information/pictures of types of ordnance that have been recovered. It also contains an emergency phone number to call should they encounter any suspect ordnance (see documents E-4 and I-1).

(11) The collection of records obtained concerning the Plano Trabuco Target Area was reviewed regarding the specific types of practice bombs and rockets used at the site. While no precise list could be located, the devices used have been determined through evaluation of items recovered and knowledge of ammunition typically used during that time-frame. This information is discussed in Section 8 of this report.

(12) While records clearly indicate continual recovery of OEW at the 1800 acre site, there has never been any known/reported deaths or injuries.

c. Personnel Interviews

(1) Personal interviews were conducted on 3 March 1993, on-site at the Rancho Santa Margarita. The Director of Corporate Relations, Mr. James L. Williams, and the General Superintendent of the Santa Margarita Company, Mr. Glen Land, presented mapping and explanations of the location/development of the community. They reviewed the procedures used by the company during development to assure the residents/public safety (as noted in Section 4.b.(10) above). Mr. Land, who was directly involved with grading operations during site development was able to indicate on a drawing of the site, the approximate areas associated with

various concentrations of retrieved ordnance (see Plate 2). Mr. Williams stated that all debris found through the years had been picked up by hand without incident. He indicated that all residents are well informed of the prior use of the site as a practice target range, and presented the "Welcome Packets" given to current and prospective buyers. These packets presented information and pictures of the ordnance that has been recovered. They also included a 24 hour hot line for reporting any potential ordnance one may detect (see document E-4). He then noted that they have had no reports of ordnance to their hot line for the last couple of years, more or less. Mr. Williams, who is retired from the Marine Corps and possesses some understanding of the ordnance being encountered, explained that in prior conversations with EOD personnel, he was told that ordnance recovered that may have contained spotting charges or primers that had not functioned, were deteriorated/rusted to a point that they would probably not function now (I-1).

(2) Mr. Ronald Ress, Legal Counsel for the El Toro MCAS, has been involved with the process/mitigation between the O'Neill Family (Santa Margarita Company) and DOD since 1984. The interview with Mr. Ress basically proved to confirm the information given us by Mr. Williams. He noted that the "system" was not equipped to handle the type of problems encountered by the developers at the time. Consequently, the decisions made by the developers to remove the ordnance at their own expense was, in his opinion, understandable (see document I-2).

(3) Personal interviews were conducted with Mr. Tony Tobin, Temecula Museum Curator, and Mr. Louie Roripaugh, both current residents of Temecula, California. Mr. Roripaugh is 86 years old and has lived in the area all his life. Neither of these gentleman had ever heard of "Temecula Bombing Range" (see Document I-3).

(4) All persons interviewed, that had any knowledge of the area, had no idea why this 1800 acre site was being referred to as "Temecula Bombing Range". One person commented that "only the Army seems to call it that," apparently referring to the Corps of Engineers (see documents I-1 thru I-3).

(5) A telephone conversation with the Orange County Hazardous Device Squad did confirm at least one call recently received concerning retrieved ordnance in the Santa Margarita Area. While he could not be precise, he suspected that there have been a few calls of ordnance in the area in recent years (see document I-6).

5. REAL ESTATE

a. **Confirmed Formerly Used Defense Site**

(1) Former land usage by the Department of Navy, U.S. Marine Corps was previously confirmed for the entire site as summarized in section 4.a of this report (see documents G-1 thru G-8). The 1800 acre site, located on Trabuco Mesa near Mission Viejo, California, was used by the U.S. Marine Corps (and possibly the Army Air Corps) as a practice target range for aircraft pilots based at El Toro Marine Corps Air Station, California.

(2) By 1956 all acreage that had been leased/used by the Department of the Navy was relinquished. Today, no ownership or usage of any part of the Former Plano Trabuco Target Area remains with the Department of Defense (DOD) or any other agency within the Federal Government (see document L-4).

b. **Potential Formerly Used Defense Site**

(1) All information obtained during the archives search, site visit, and personal interviews has verified the accuracy of the ownership of the said 1800 acre site. However, because documentation has been discovered that indicates the site investigated may not have been the Temecula Bombing Range, the target area believed to have been the actual Temecula Bombing Range now exists as a potential FUDS site.

(2) Documentation indicating the exact location of the potential Temecula Bombing Range (Target No.107) can be found at Appendix F, document F-2. It was located in Riverside County, California, and used by permit of the Vail Company to the United States of America.

(3) It should be further noted that the title on document F-1 reads "Temecula Targets, Discontinuance of" - pluralizing the word "Targets". This would indicate the potential for **several** locations to exist.

6. SITE INSPECTION

a. **General Procedures and Safety**

(1) During the period 28 February - 4 March 1993, members of the Assessment Team traveled to the Plano Trabuco Target Area, Rancho Santa Margarita, Orange County, California. The primary task of the Assessment Team was to assess OEW presence/potential due to usage/disposal of the area as a target range. On-site inspection was limited to

non-intrusive methods, i.e., subsurface sampling was not authorized nor performed.

(2) Real estate rights of entry were not obtained by inspection personnel due to the willingness of the land owners to accommodate the assessment team. As such, control and jurisdiction of the site remained with the owners during this inspection.

(3) A site safety plan was developed and utilized by the assessment team to assure safety from injury during the site inspection. A pre-inspection briefing was conducted which stressed that OEW should only be handled by military EOD personnel (Ref B-14).

(4) Prior to the on-site visit, a thorough review of all available reports, historical documents, and available reference material gathered during the records search was made to ensure awareness of the types and uses of potential ordnance.

(5) The visit began at the office of the Rancho Santa Margarita Community Visitor Center, with an exchange/discussion of information among Mr. James L. Williams, Director of Corporate Relations, Mr. Glen Land, General Superintendent, and the Assessment Team members, Ms. Mary Jo Civis and Mrs. Alma T. Harris. During this exchange it was determined that OEW had been unearthed when construction of the Rancho Santa Margarita began in the 1984/85 time frame, and continued throughout 1989/90 (see document I-1).

(6) Mr. Land accompanied the Assessment Team on a visual inspection of the Ranch. Before proceeding, he presented the inspection team with blueprints of the Santa Margarita Development and pointed out specific areas where ordnance was retrieved, indicating the basic quantities/disbursement. He also pointed out where the heaviest concentrations of OEW were located. He stated, and Mr. Williams confirmed, that to date, there has been no ordnance found at the proposed Las Flores site/development where grading is currently taking place (see document I-1 and Plate 2).

b. Target Area

One theorized target area used by the pilots was an adobe hut, the remnants of which are considered an historical marker (see Photos J-1, J-4 and Plates 2 and 4). This was the area with the heaviest concentrations of OEW found by the Santa Margarita Company during land development. No OEW was observed in this area.

c. Tijeras Creek Golf Course (8th Hole)

During our inspection of the site, Mr. Land pointed out the Tijeras Creek Golf Course; in particular, the fairway for the 8th hole. This is the location of several tons of buried OEW. It had been gathered/excavated by the Rancho Santa Margarita Company during land development and buried 20' to 30' under the surface of the fairway (see Photos J-1, J-7, and Plate 2). No OEW was observed by the inspection team in this area.

d. Chiquita Canyon

Chiquita Canyon is not a part of the 1800 acre site. It is a remote location where the Santa Margarita Company transported tons of ordnance that had been removed from the 1800 acre site (see Plate 2). Due to prior flooding in the canyon area, the inspection team was unable to reach the actual location of the stockpiled ordnance. Our observations were limited to a distant siting of Chiquita Ridge (see Photo J-5). It was pointed out by Mr. Land however, that the canyon was completely clear of OEW. He noted that the COE had contracted for its removal (see document E-3 and Photos K-1 thru K-4).

e. Overall Acreage

Various locations throughout the site were visited. Fully developed locations, along with areas of current grading activities were observed (see Photos J-2, J-3 and J-6). No observations of OEW were made.

7. EVALUATION OF ORDNANCE PRESENCE

a. General Procedures.

(1) Each subsite was evaluated to determine confirmed, potential, or uncontaminated ordnance presence. Confirmed ordnance contamination is based on verifiable historical evidence or direct witness of ordnance items since site closure. Verifiable historical record evidence consists of ordnance items located on site and documented by local bomb squads, Military Explosive Ordnance Disposal (EOD) Teams, newspaper articles, correspondence, current findings, etc. Direct witness of ordnance items consists of the site inspection team directly locating ordnance items by visual inspection. Additional field data is not needed to identify a confirmed site.

(2) Potential ordnance contamination is based on a lack of confirmed ordnance. Potential ordnance contamination is inferred from records or direct witness.

Inference from historical records would include common practice in production, storage, usage, or disposal, at that time, which could have allowed present day ordnance contamination. Potential ordnance contamination could also be based on indirect witness or from present day site features. Additional field data is needed to confirm potential ordnance subsites.

(3) Uncontaminated ordnance subsites are based on a lack of confirmed or potential ordnance contamination. There is no reasonable evidence, either direct or inferred, to suggest present day ordnance contamination. Additional field data is not needed to assess uncontaminated ordnance subsites.

b. Target Area

(1) No information was obtained to indicate that any target was emplaced at this site. The target area is "theorized" based on two facts:

(a) Disbursement of the ordnance noted by the developers clearly indicated that the largest quantities were spread around the vicinity of the hut.

(b) During the time frame the area was used by the pilots, no other structures were known to be located on the plane. Consequently, the adobe hut most probably seemed like "something to aim at".

(2) While the adobe hut has been indicated as the apparent target, it is important to note that it is located on the extreme western edge of the site boundary (possibly even outside the boundary itself). This fact equates to OEW contamination outside the technical area of the FDE.

c. Tijeras Creek Golf Course

The OEW under the fairway of the 8th hole of the golf course was buried by the developers and clearly documented. When huge amounts of OEW were recovered by the developers, EOD was unable to respond. Because there was no other apparent means for disposal, the Santa Margarita Company decided to bury the OEW during grading operations. This particular location was chosen for two key reasons:

(1) Because of its openness, it was felt that, should anything resurface, it would be immediately noticed/recognized, ultimately allowing immediate mitigation of any hazard to occur. (2) The chance of future disturbance/excavating in the location was remote, as there was no reason to suspect that the golf course would ever be relocated (see document I-5).

d. Chiquita Canyon

(1) Chiquita Canyon was not a location contaminated by the Marine Corps' use during WW II. The ordnance was placed there by the developers in an effort to remove OEW from the actual target area. Again, this was done due to an apparent lack of other removal options at the time.

(2) This entire stockpile of OEW was ultimately removed under Corps of Engineer, Huntsville Division Contract DACA 87-91-D-0010 in the fall of 1991. Complete removal, as stated by Mr. Land during the site visit, was confirmed by the COE safety representative (see document I-4).

e. Overall Area

In paragraph 7.b., the adobe hut was noted as the apparent target area. However, because the target was an apparent "target of choice" rather than a technically designated one, it must be understood that this allows for a larger area of disbursement than would normally be expected. Any given pilot could have homed in on a sage brush, etc., to use as his target. Consequently, varying degrees of OEW have been (could be) found throughout the entire area. However, it does appear that little, if any, OEW has ever been recovered in the extreme northern area of the range. Plate 2 represents Mr. Land's assessment of OEW disbursement noted during site development.

8. TECHNICAL DATA OF ORDNANCE AND EXPLOSIVES.

a. End Item Technical Data

(1) Some of the practice bombs (also referred to as target markers) that were recovered contained a firing assembly which ignites upon impact. This ignites an expelling charge of black powder and a smoke or "marker" of stabilized red phosphorous or zinc oxide. The practice rockets were inert with rocket motors typically containing a double-based propellant.

(2) TABLE 8-1 has been developed to establish a list of potential ordnance items that could exist at various sub-surface levels within the Former Plano Trabuco Target Area. As no comprehensive list of the exact types/models of ordnance used could be located, this table has been developed based on historical documentation indicating actual items retrieved from the area since site closure. Exact types/models have been included as documentation permits. All information in parentheses is speculative and based on other information known to be true.

(3) Based on TABLE 8-1, drawings/information of ammunition items have been provided at Appendix D.

TABLE 8-1 AMMUNITION USED AND EXPLOSIVE/CHEMICAL FILLER		
ITEM	TYPE/MODEL	FILLER/WEIGHT
Bomb, Practice W/ Signal	3 lb/(AN-Mk 23) /Mk 4	Inert (cast steel) 10 gm Zinc Oxide or Red Phosphorus 3 gm Black Powder 3 gm Smokeless Powder Titanium Tetrachloride
	4.5 lb/(Mk 43) /Mk 4	Inert (cast lead) SAB
	25 lb/Mk 76 /Mk 4	Inert (cast metal) SAB
Rockets, Practice	2.25" SCAR	Inert (cast iron or zinc)
	3.5" AR	Inert (steel)
	5' HVAR	Inert
Motors, Rocket	2.25"	14 gm Black Powder Igniter 1.75 lb Ballistite (propellant)
	3.5"	Black Powder Igniter 8.5 lb Propellant
	5"	55 gm Black Powder Igniter 24.8 lb Ballistite (propellant)

b. Chemical Data of Ordnance Fillers

TABLE 8-2 has been developed to provide information on the explosive/chemical compounds used in the ordnance cited in TABLE 8-1.

TABLE 8-2
SUMMARY OF SITE ORDNANCE FILLERS

Explosive Material	Synonyms	Chemical Compounds
Smokeless Powder	FNH Powder	
Various %s of:		
Nitrocellulose	Nitrocotton	C ₃ H ₅ (ONO ₂) ₃
Dinitrotoluene	DNT	C ₆ H ₂ CH ₃ (NO ₂) ₂
Dibutylphalate	Gelling Agent	C ₆ H ₄ (CO ₂ C ₄ H ₉) ₂
Diphenylamine	DPA; Stabilizer	(C ₆ H ₅) ₂ NH
Black Powder		
74% Potassium Nitrate	Salt Peter; Niter	KNO ₃
11% Sulfur		S
16% Charcoal		C
Titanium Tetra-chloride	White Smoke	TiCl ₄
Red Phosphorus	RP; Red (DOT)	Red P ₄
Zinc Oxide	Chinese White	ZnO
Ballistite	JPN	
60% Nitrocellulose	NC	SAB
40% Nitroglycerin	NG	C ₆ H ₇ (OH) ₂ (ONO ₂)

9. EVALUATION OF OTHER SITE INFORMATION

a. **Hazardous, Toxic, and Radiological Waste**

No information has been found to indicate there are any potential sites/sources of HTRW.

b. **Building Demolition/Debris Removal**

No information has been obtained to indicate that any buildings/facilities were constructed by the Department of the Navy (or DOD).

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APPENDIX A

ACKNOWLEDGEMENTS OF ORGANIZATIONS/PERSONNEL

APPENDIX A

ACKNOWLEDGMENTS/CONTACTS

The following organizations and personnel are acknowledged for their support.

Organization	Name	Telephone	Nature of Support
U.S. Army Armament, Munitions and Chemical Command ATTN: AMSMC-HO Rock Island, Illinois	Mr. Ralph Krippner Archivist, Historical Office	(309) 782-1272	Personal Information
Orange County Historian Riverside, CA	Mr. Jim Sleeper (Private Consultant)	(714) 838-2239	Referrals
Santa Margarita Company 28811 Ortega Highway P.O. Box 9 San Juan Capistrano, CA 92693	Mr. James L. Williams, Director-Corporate Relations	(714) 831-6450 FAX: 248-1763	Interview (see document I-1) Literature
Santa Margarita Company 30211 Avenida De Banderas, Suite 130 Rancho Santa Margarita, CA 92688	Mr. Glen Land, General Superintendent	(714) 858-9206 FAX: 589-1371	Interview (see document I-1) Maps, Site Tour
U.S. Marine Corps Marine Corps Air Station, El Toro Santa Ana, CA 92709-5001	Mr. Ronald G. Ress, Counsel	(714) 726-3805	Interview (see document I-2) Documents

ACKNOWLEDGMENTS/CONTACTS continued

Organization	Name	Telephone	Nature of Support
U.S. Army Engineer Division, Huntsville ATTN: CEHND Huntsville, AL	Mr. James Anelle,	(619) 279-8630	General Information (see document I-5)
Joint Public Affairs Office History and Museums Box 555019 Camp Pendleton, CA 92055	Ms. Kathy Gralar Base Historian	(619) 725-5566	Referrals
Orange County Public Library El Toro Branch 24672 Raymond Way Lake Forest, CA 92630	Staff	(714) 855-8173	Historical Records
Temecula Museum 41950 Main Street Olde Towne Temecula, CA	Mr. Tony Tobin, Curator	(909) 676-0021	Interview (see document I-3)
Riverside City and County Public Library Riverside, CA	Staff	(714) 726-5202	Referrals
U.S. Army Engineer Division, Los Angeles District ATTN: CESPL-ED-PM P.O. Box 2711 Los Angeles, CA 90053-2325	Ms. Debra Castens, P.E. Mr. Jatin Desai	(213) 894-2865 (213) 894-6226	Reports, General Information

ACKNOWLEDGMENTS/CONTACTS continued

Organization	Name	Telephone	Nature of Support
University of Utah Library Salt Lake City, UT	Staff	(801) 581-8558	Reference Materials
U.S. Army Health Services Command ATTN: HSXZ-FS-RIA Rock Island, IL 61299	Mr. Bob Platt Mr. Gary Heitman	(309) 782-0806	
Temecula, CA	Mr. Louie Roripaugh, Resident		Interview (see document I-3)
Defense Technical Information Center Cameron Station Alexandria, VA 22304	Computer		
DIALOG Information Services, Inc. 3460 Hillview Avenue Palo Alto, CA 94304	Computer		
U.S. Naval Technical Ctr f/ Explosive Safety, Code 044 Naval Surface Warfare Ctr Indian Head, MD 20640	Walter Ott	(301) 743-6533	Historical Records
U.S. Army Engineer Waterways Experimental Station Technical Information Center Vicksburg, MS	Staff		Reports

ACKNOWLEDGMENTS/CONTACTS continued

Organization	Name	Telephone	Nature of Support
National Archives, Pacific Southwest Region 24000 Avila Road Laguna Niguel, CA 92656	Staff	(714) 643-4241	Historical Records
HQ, U.S. Marine Corps History Museum Division 901 M Street, SE MC Historical Center Washington, DC.	Mr. Danny Crawford	(202) 433-4691	Historical Records
Naval Historical Center, Operational Archives Washington Navy Yard Washington, DC. 20374	Kathy Lloyd	(102) 433-3170	Historical Records
University of CA, Irvine University Library, Dept of Special Collections Irvine, CA	Irene Thechselberg	(714) 725-3113	Referrals

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APPENDIX B

GENERAL REFERENCES AND ABSTRACTS

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GENERAL REFERENCES AND ABSTRACTS

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APPENDIX C

GLOSSARY

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GLOSSARY

AR	Aircraft Rocket
BD/DR	Building Demolition/Debris Removal
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEHND	Corps of Engineers, Huntsville Division
CENCD	Corps of Engineers, North Central Division
CENCR	Corps of Engineers, North Central Division, Rock Island District
CESPD	Corps of Engineers, South Pacific Division
CESPL	Corps of Engineers, South Pacific Division, Los Angeles District
COE	Corps of Engineers
CON/HTRW	Containerized Hazardous, Toxic, and Radioactive Waste
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
EMA	Environmental Management Agency
EOD	Explosive Ordnance Disposal
FDE	Findings and Determination of Eligibility
FUDS	Formerly Used Defense Sites
HE	High Explosives
HTRW	Hazardous, Toxic and Radiological Waste
HVAR	High Velocity Aircraft Rocket
INPR	Inventory Project Report
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
OCHDS	Orange County Hazardous Device Squad
OEW	Ordnance and Explosives Waste
PN	Project Number
SARA	Superfund Amendments and Reauthorization Act
SCAR	Subcaliber Aircraft Rocket
SMCAC-ESL	Army Material Command Ammunition Center- Explosive Safety Logistics
USA	U.S. Army
USACE	U.S. Army Corps of Engineers
USADACS	U.S. Army Defense Ammunition Center and School
USAEDH	U.S. Army Engineer Division, Huntsville
USATCES	U.S. Army Technical Center for Explosives Safety
UXO	Unexploded Ordnance

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APPENDIX D

TEXTS/MANUALS

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TEXTS/MANUALS

Table of Contents

- D-1 Bomb, Practice - 3 lb & 4 lb (Ref B-15, B-25, B-28).
- D-2 Bomb, Practice - 25 lb (Ref B-28).
- D-3 Signal, Bomb, Practice (Ref B-28).
- D-4 Rockets, Practice - 2.25" (Ref B-23, B-26, B-27).
- D-5 Rockets, Practice - 5" (Ref B-24, B-27).
- D-6 Motors, Rocket (Ref B-24).

BOMBS FOR AIRCRAFT

Packing. The bomb bodies, parachute units, fuzes, and smoke charges are shipped separately. The bomb bodies are packed four to a wooden box, whereas the parachute assembly is packed eight to a wooden box.

Complete Round Components. A complete round consists of the following components:

BOMB, practice, 17-pound, M37

PARACHUTE and CASE assembly for 17-pound Practice Bomb M37

BOMB, PRACTICE, 23-POUND, M71.

General. This bomb is designed to give practice in low-altitude parachute fragmentation bombing using an adapter cluster.

The bomb consists of the 23-pound M40 Bomb Case and parachute assembly. The bomb case is empty, and in place of a nose fuze, a nose plug is inserted. It is dropped from a cluster in the same manner as the 23-pound M40 Bomb. The open parachute lying on the ground after dropping provides a simple and efficient means of identifying where the bomb struck. All parts of this bomb are reusable.

It is packed in clusters, three bombs to the Adapter Cluster M3 previously described. The entire practice bomb cluster is designated as the M5 and differs from the M4 Fragmentation Bomb Cluster in that three practice parachute bombs replace the three fragmentation parachute bombs and no fuzes are used.

BOMB, PRACTICE, 23-POUND, M73.

General. This bomb is designed to give practice in low-altitude parachute fragmentation bombing, using bombs suspended singly.

This bomb consists of the 23-pound M72 Fragmentation Bomb Case and parachute assembly. The bomb case is empty, and in place of a nose fuze, a nose plug is inserted. It is dropped in the same manner as the 23-pound M72 or as the 17-pound M37 Practice Bomb. The open parachute lying on the ground after dropping provides a simple and efficient means of identifying where the bomb struck. All parts of this bomb are reusable.

BOMB, PRACTICE, 3-POUND, AN-MK. 5 MOD. 1.

General. This bomb is designed to give practice in low-altitude bombardment. It is particularly used for dive bombing practice on water or land. The bomb is rugged enough to allow for reuse after it has been dropped.

Body Description. The bomb body is streamlined or tear drop in shape, having a blunt nose and a tapered tail. It is made in one piece zinc alloy casting. An axial hole somewhat wider at the nose portion, extends through the bomb and is approximately 0.9 inch in

BOMBS FOR AIRCRAFT

diameter. A tail fin which consists of four blades is part of the body. There is no suspension lug on the bomb body. At the nose, a firing mechanism and blank shotgun shell is assembled to provide for a puff of white smoke. The entire length of the bomb body is about 8 inches. The total weight of the bomb body is approximately 2.7 pounds.

Firing Mechanism and Spotting Charge. The firing device consists of two shallow cups separated by a spacer. The firing pin extends through the bottom of one cup. The firing mechanism is held in place at the nose by a cotter pin which passes through holes in the bomb body above the firing pin and thereby prevents it from falling out through the nose and by a shoulder produced by the axial hole becoming smaller in diameter to prevent it from dropping out through the tail of the bomb body.

The Signal Cartridge AN-Mk.4 consists of a long 10-gage blank shotgun shell 5.75 inches long containing an ejection charge and a pyrotechnic charge which burns above water after impact, forming a large puff of white smoke. To assemble the cartridge, it is only necessary to remove the cotter pin and firing pin assembly. The cartridge is then inserted. It is held by the flange on the brass base of the cartridge coming in contact with the shoulder of the bomb body. The firing pin assembly, having the firing pin directly above the primer of the cartridge, is replaced. The cotter pin is next inserted through holes in the nose of the bomb body to prevent the entire assembly from dropping out. No arming wire is used.

Function. The bomb is dropped, and on impact, the firing pin strikes the primer of the cartridge. The flame produced ignites the black powder which in turn expels a puff of white smoke through the tail of the bomb body to indicate the point of impact. The bomb body is reusable.

Packing. The bomb body and signal cartridge are shipped separately. The bomb bodies are shipped with the firing mechanism assembled to the bomb, 25 per crate. The signals are packed in a paper carton, 20 per carton, 20 cartons are packed per wooden box.

Complete Round Components. A complete round consists of the following components:

BOMB, practice, 3-pound, AN-Mk. 5 Mod. 1

BOMB, signal, practice, AN-Mk. 4

Comparison to Other Models. The AN-Mk.5 Mod. 1 can be compared to a number of other miniature practice bombs as follows:

AN-Mk. 5. This bomb has a firing mechanism which is less sensitive.

M36. This bomb is the same as the AN-Mk. 5. It is made of a one piece die casting. It utilizes the M4 and M5 Blank 10-gage Shotgun Shell. The M4 has more powder and is used for high altitudes.

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AN-Mk. 23. This bomb is 3 pounds in weight, made of cast iron.

AN-Mk. 43. This bomb is 4 pounds in weight, made of lead, and suited for glide and dive bombing. It conserves zinc.

FURTHER REFERENCES: Ordnance Drawings; TM 9-1980, *Bombs for Aircraft*; TM 3-330, *Incendiary Bombs*; OS 9-18, *Ammunition, General*; Ordnance Pamphlet No. 878; Ordnance Pamphlet No. 736; TM 9-1900, *Ammunition in General*; Pamphlet No. 2, *Chemical Warfare*; *The Ordnance Sergeant*; Complete Round Chart No. 5981; O.O. 7224, *Ordnance Safety Manual*; OS 9-49, *Aircraft Depth Bomb Mk. XVII*.

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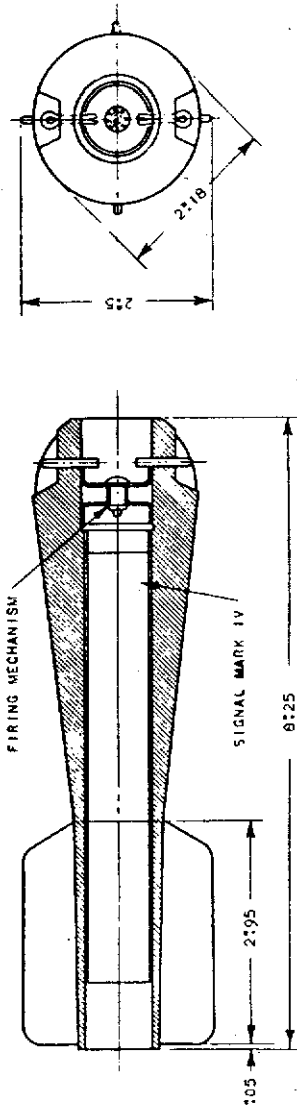
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AMMUNITION INSPECTION GUIDE



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Figure 277 — Practice Bomb Mk. V (Miniature—Navy)

3-LB MINIATURE PRACTICE BOMB Mk 5 Mods 2 and 3
 3-LB MINIATURE PRACTICE BOMB AN-Mk 23 Mod 1
 4.5-LB MINIATURE PRACTICE BOMB Mk 43 Mod 1

Mark.....	Mk 5.....	AN-Mk 23.....	Mk 43.....
Mod.....	2 and 3.....	1.....	1.....
General Arrangement.....	452859.....	452860.....	452858.....
List of Drawings.....	Sk 165595.....	Sk 165597.....	Sk 165596.....
Length of Assembled Bomb (in.).....	8.25.....	8.25.....	8.25.....
Diameter (in.).....	2.18.....	2.18.....	2.18.....
Fin Span (In.).....	2.5.....	2.5.....	2.5.....
Weight:			
Without Signal (lb).....	2.56.....	2.87.....	4.31.....
With Mk 4-Type Signal (lb).....	2.68.....	3.00.....	4.43.....
With Mk 5-Type Signal (lb).....	2.62.....	2.94.....	4.37.....
Firing-Pin Assembly.....	Mk 1 Mod 0.....	Mk 1 Mod 0.....	Mk 1 Mod 0.....
Signal.....	Mk 4 Mods or Mk 5 Mod 0.....	Mk 4 Mods or Mk 5 Mod 0.....	Mk 4 Mods or Mk 5 Mod 0.....

General Description

The 3-lb MPB Mk 5 Mods 2 and 3, the 3-lb MPB AN-Mk 23 Mod 1, and the 4.5-lb MPB Mk 43 Mod 1 are similar in physical appearance and differ basically in the metal used to cast the body.

Bomb Mk 5, now obsolescent, is manufactured from zinc alloy and weighs the least of the three bombs. Bomb AN-Mk 23 is made of cast iron. Bomb Mk 43, now obsolete, was manufactured from cast lead and was the heaviest of the three bombs.

The cast body has a bore throughout its transverse axis which houses a signal and firing-pin assembly.

Four fins are cast integrally with the bomb body. A rectangular sheet-metal shroud attached to the fins is used to stabilize the bomb in flight. Two crimps, 180 degrees apart, anchor the shroud to the fin blades.

The firing-pin assembly consists of two shallow metal cups, separated by a spacer which houses the firing pin. A cotter pin through the nose of the bomb body and two recesses in the lip of the forward cup lock the firing-pin assembly and signal in place.

Painting and Marking

Identification data is cast integrally on the body of the bomb during manufacture, and the bomb has no color marking other than that of the cast metal.

Use

The 3-lb MP Bomb Mk 5 is used for bombing practices on armored-deck target boats. The Bomb AN-Mk 23 is authorized for all bombing practices except those involving armored-deck target boats. The 4.5-lb MP Bomb Mk 43, now obsolete, was used for low-altitude, horizontal or dive bombing and on armored-deck target boats. The Bombs Mk 5, AN-Mk 23, and Mk 43 are used with the Mk 4-type signal, which expels a large puff of smoke rearward through the bore of the bomb when detonated by action of the firing pin. They also are used with the Mk 5 type signal, which contains a fluorescein dye and is actuated by a water inertia load on the firing pin. When the Mk 5 type signal is installed, the firing-pin assembly is not used. Special containers are utilized by aircraft to carry and release these bombs.

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11-1

Assembly With the Mk 4 Type Signal

CAUTION: Signals and bombs are not to be unpacked in advance of requirements. If unpacked and not used, return them to their original packings.

1. Remove the bomb and the signal from their packings.

2. Remove the cotter pin and the firing-pin assembly from the nose of the bomb. The firing-pin assembly should fit loosely in the bomb and not bind when being removed.

3. Check the bore through the center of the bomb; it must be clean, smooth, and not damaged in any way.

4. Inspect the firing-pin assembly for

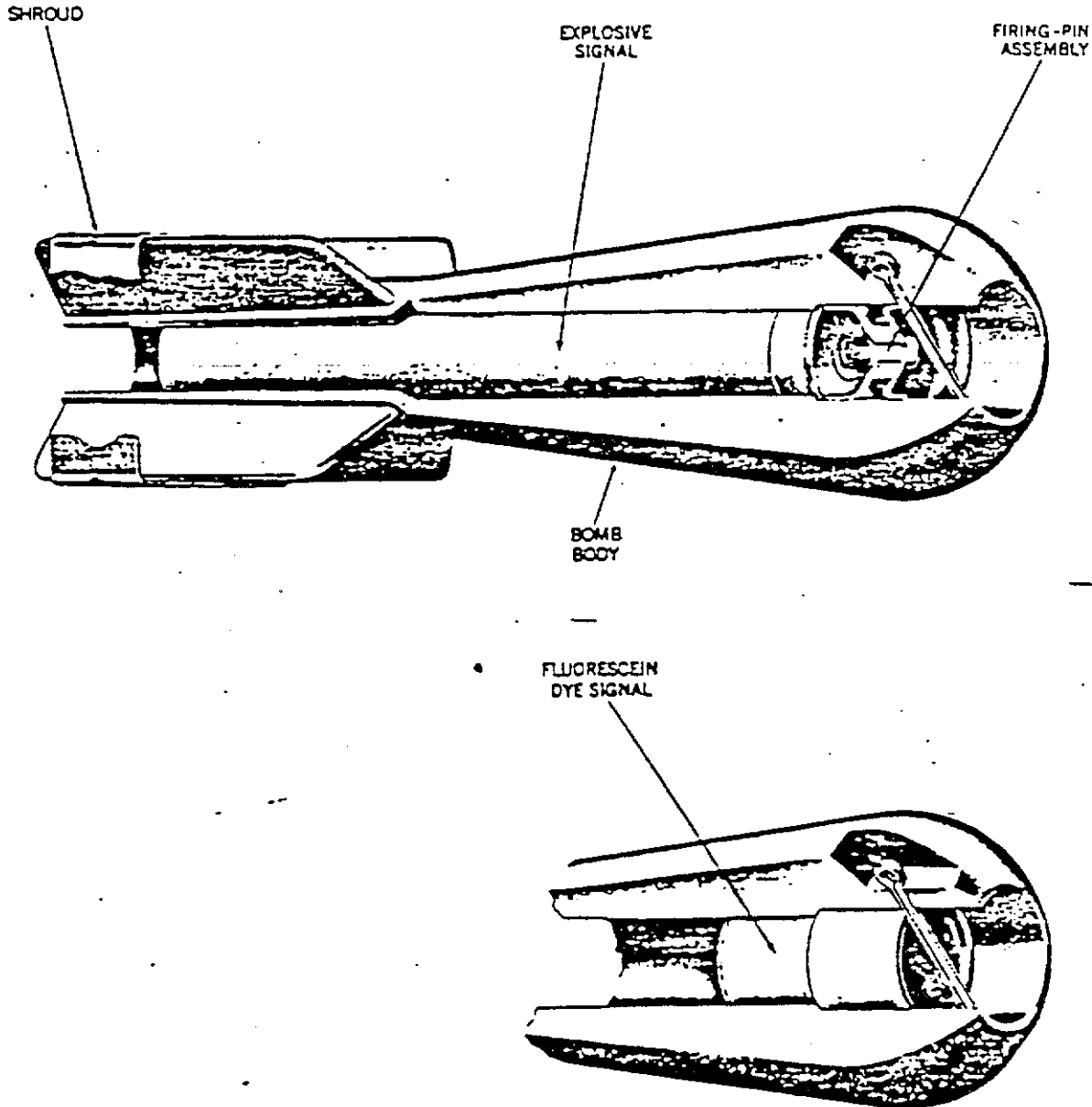


Figure 11-3.—3-lb Miniature Practice Bomb AN-Mk 23 Mod 1, Cutaway View and Detail Showing Signal Mk 5 Mod 0 Installed.

11-3

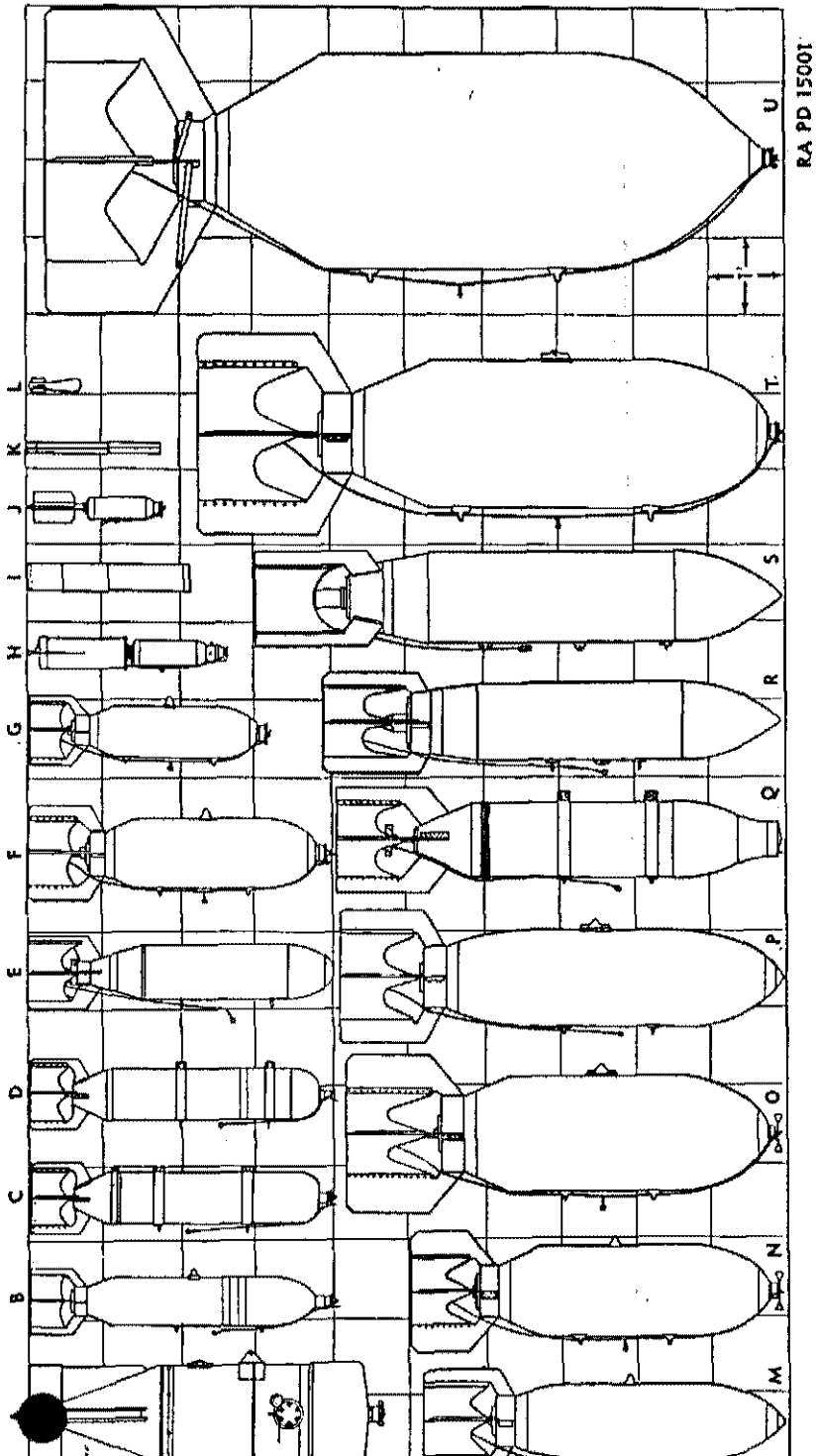


Figure 31. Aircraft bombs, all types.

- | | |
|---|---|
| A.....BOMB, depth, 325-lb., AN-Mk. 17, w/flat nose | L.....BOMB, practice, miniature, 3-lb., AN-Mk. 23 |
| B.....BOMB, gas, persistent, H, 115-lb., M70 | M.....BOMB, S.A.P., 500-lb., AN-M-58A1 |
| C.....BOMB, photoflash, M46 | N.....BOMB, G. P. 500-lb., AN-M64 |
| D.....BOMB, chemical, 100-lb., M47-A2 | O.....BOMB, G.P., 1000-lb., AN-M65 |
| E.....BOMB, practice, 100-lb. M38A2 | P.....BOMB, S.A.P., 1000-lb., AN-M59 |
| F.....BOMB, G. P., 250-lb., AN-M57 | Q.....BOMB, A. P., 1000-lb., M52A1 |
| G.....BOMB, G. P., 100-lb., AN-M30 | R.....BOMB, A.P., 1000-lb., AN-Mk. 33 |
| H.....BOMB, fragmentation, 23-lb., AN-M72 | S.....BOMB, A.P., 1600-lb., AN-Mk. 1 |
| I.....BOMB, photoflash, M23A1 | T.....BOMB, G. P., 2000-lb., AN-M66 |
| J.....BOMB, fragmentation, 20-lb., M41 (for cluster) | U.....BOMB, light'case, 4000-lb., AN-M56 |
| K.....BOMB, incendiary, 4-lb., AN-M50A2 (C.W.S. item) | |

14. **CLASSIFICATION.** In common with other types of ammunition, bombs are classified according to filler as explosive, chemical and inert. Explosive bombs are classified according to use as armor-piercing (A.P.), semiarmor-piercing (S.A.P.), general purpose (G.P.), depth, fragmentation, and practice. Chemical bombs are classified according to type of filler as gas, smoke, and incendiary. Inert bombs are used for practice and drill. Each of these types is described in detail in the following sections.

15. **IDENTIFICATION.** a. **General.** Bombs are completely identified by the standard nomenclature and the ammunition lot number which are stenciled on all packings and, where the size of the item permits, on the item itself.

b. **Standard nomenclature.** Standard nomenclature is established in order that each item stored and issued by the Ordnance Department may be specifically identified by name. It consists of the name, type, and weight of the item and the model designation. The standard nomenclature lists for bombs and components are SNL's, S-1, S-2, and S-3. The use of standard nomenclature is mandatory for all purposes of record, except as described in e below.

c. **Model.** In order to distinguish between different designs of the same type, a model number is assigned at the time a design is adopted as standard. The model designation consists of the letter M followed by an arabic numeral. Modifications of the original design are indicated by the addition of the letter A and the appropriate arabic numeral to the model designation. For example, M38A2 signifies the second modification of the item originally adopted as M38. Cer-

25-LB PRACTICE BOMB Mk 76 Mods 0, 1, and 2

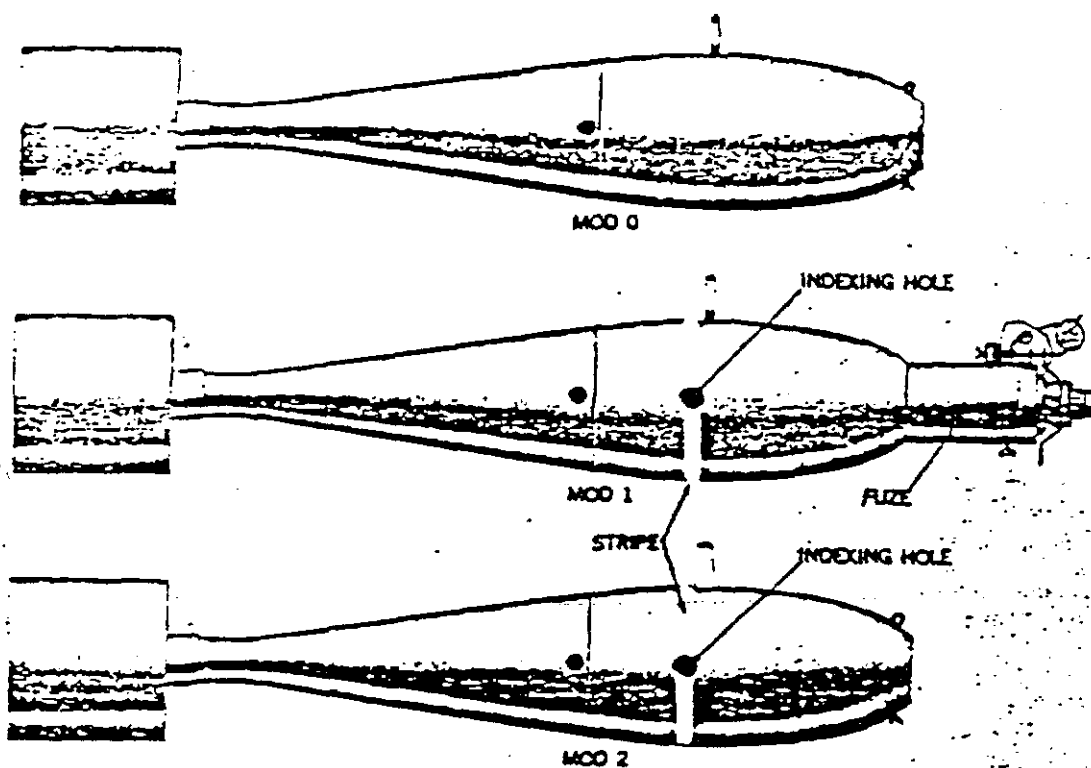


Figure 11-10.—25-lb Practice Bomb Mk 76 Mods.

Mark.....	76.....	76.....	76.....
Mod.....	0.....	1.....	2.....
General Arrangement..	561638.....	1381205.....	1381208.....
List of Drawings.....	Sk 165603.....	165802.....	165803.....
Length of Complete Bomb (with fuze) (in.).....	22.5.....	27.155.....	22.5.....
Weight of Complete Bomb (lb).....	23.8.....	25.10.....	23.70.....
Signal.....	Mk 4 Mods 0, 1, 2, 3.....	Mk 4 Mod 3.....	Mk 4 Mod 3.....
Fuze.....	Not Used.....	AN-M146E3.....	Not Used.....
Firing Pin.....	Mk 1 Mod 0.....	Not Used.....	Mk 1 Mod 0.....

General Description

The 25-lb PB Mk 76 Mod 0, now obsolescent, has a tear-drop shaped, cast-metal body which is centrally bored. The tail-tube assembly fits into the end of the bore. The conical afterbody covers the tail-tube assembly and is threaded to the body. The two sections are staked together to prevent un-

screwing. The fin assembly is welded to the tail tube. Firing-Pin Assembly Mk 1 Mod 0 and the signal are assembled into the bore of the body and secured in place by a safety cotter pin.

In the Mod 0 a single lug is positioned just forward of the center of gravity of the bomb. Some bombs of early manufacture

PRACTICE BOMB SIGNAL Mk 4 Mods 3 and 4

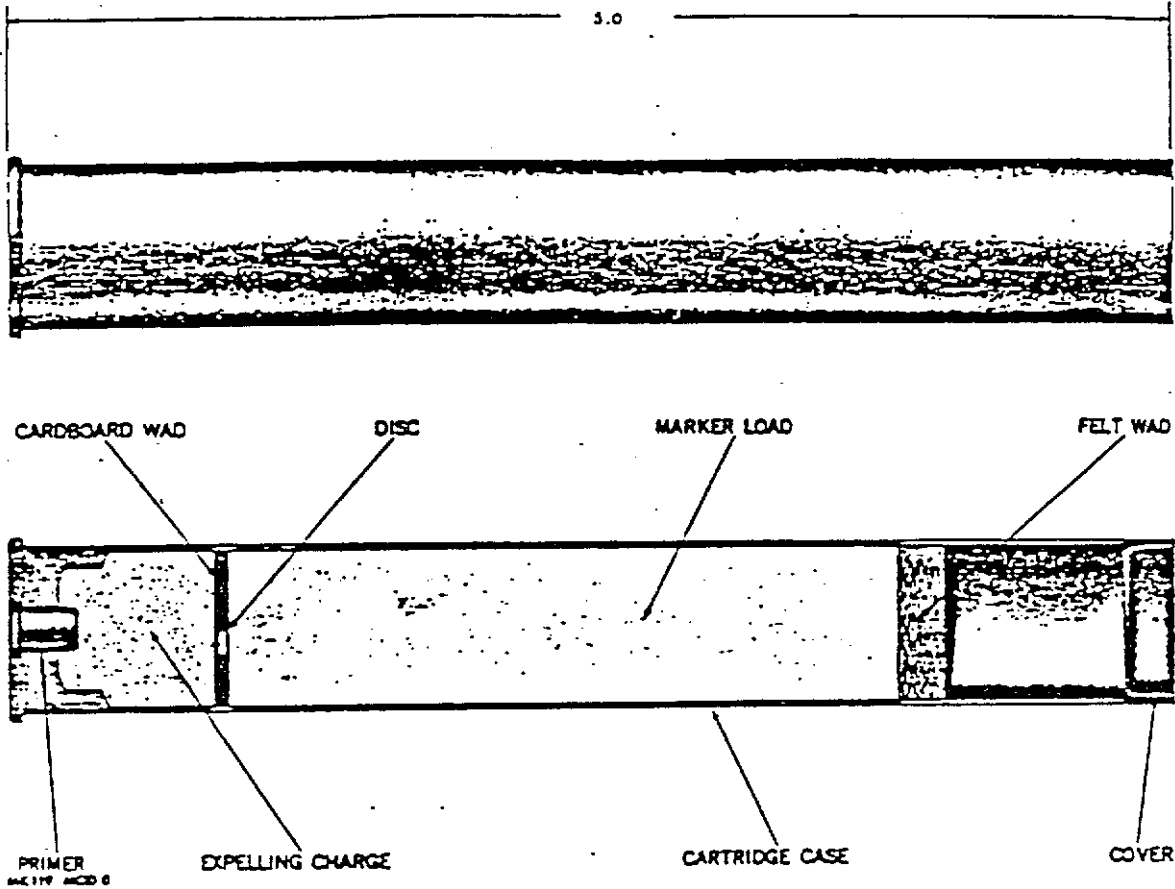


Figure 3-19.—Practice Bomb Signal Mk 4 Mods 3 & 4.

Mark.....	4.....	4.
Mod.....	3.....	4.
General Arrangement.....	398300.....	1211717.
List of Drawings.....	Sk 166560.....	254093.
Length (in.).....	5.0.....	5.0
Diameter (in.).....	0.85.....	0.85.
Weight (lb).....	0.16.....	0.16.
Case Material.....	Aluminum.....	Aluminum.
Expelling Charge.....	Smokeless powder.....	Smokeless powder.
Marker Load.....	Stabilized red phosphorous.	Zinc oxide.
Shipping Containers:		
Cardboard Carton.....	200 signals.....	200 signals.
Wood Box.....	25 cartons.....	25 cartons.

General Description

Practice Bomb Signals Mk 4 Mods 3 and 4 are essentially 10-gage shotgun shells of

extra length. They contain an expelling charge of smokeless powder and are primed with a Primer, Mk 119 Mod 0. A pyrotechnic

Chapter 10

SUBCALIBER ROCKETS

Purpose

The purpose of subcaliber rockets is to train personnel in the technique of rocket firing. Considerable training and practice is required by aircraft pilots to reduce the overall dispersion of rockets fired to the inherent dispersion of the rockets themselves.

Description

General. 2725 Subcaliber Aircraft Rockets, figure 17, are high-velocity, fin-stabilized, self-propelled missiles with inert heads. They are made up of two major components, a head and a

motor. A complete description of the round is given in OP 1187.

Subcaliber Rocket Head. The head is a metal cone threaded at the rear for assembly to the motor. It is hollowed out to attain the proper weight for the desired ballistic characteristics.

Subcaliber Rocket Motor. The motor consists of a metal tube threaded at the front for attaching the rocket head. The tube contains a cylindrical grain of ballistite for a propellant. The propellant is ignited by an electrically fired igniter charge of black powder. The rocket is propelled by the propellant gases escaping through venturi-type nozzles at the rear of the motor tube.

INTRODUCTION

WHAT THEY ARE

The 2.25-inch Subcaliber Aircraft Rockets described in this pamphlet are subcaliber, high velocity, fin stabilized rockets with inert heads.

THEIR PURPOSE

The 2.25-inch Subcaliber Aircraft Rocket is used as a training round in place of the service aircraft rockets.

Only one of the two types of subcaliber rockets is necessary for this purpose since the essential elements in rocket training embody; first, teaching the pilot to put the center of impact of the training round onto the target by adjusting his attack conditions to those originally laid out, and, second, to attempt, by proper fly-

ing, to reduce the overall dispersion to the inherent dispersion of the training round.

The assembly sheet on page 3 lists the various combinations of components now in service.

WHERE THEY ARE USED

These rockets are for use in conducting training and refresher courses in forward firing from aircraft.

WEIGHTS AND DIMENSIONS

The weights and dimensions of the various complete rounds, of their individual components, and of the rounds packed in shipping containers are given in the chart of Physical Characteristics of 2.25-inch Subcaliber Aircraft Rockets on page 3.

DESCRIPTION

GENERAL DESCRIPTION

2.25-inch Aircraft Rockets are composed of two major components, the head and the motor.

The Head is of machined steel, diecast zinc or cast iron. It is threaded at the rear for assembly to the motor and is hollowed out to give the head the correct weight to produce proper ballistic characteristics when the rocket is fired.

The Motor consists of the following parts:

1. TUBE. The tube is a seamless, or electrically welded, steel tube which contains the propelling charge and the igniter. It is the combustion chamber for the propellant.

2. MOTOR SHIPPING CAP. This cap protects the threads on the front end of the motor and also acts as an additional moisture seal for the front end of the motor. It must be removed before assembly of motor and head.

3. FRONT CLOSURE DISC. This disc acts as a seal, keeping out moisture and dirt from the front end of the motor. It also serves to retain the igniter and the grain in place in the motor.

4. IGNITER. The igniter is a plastic case con-

taining 14 grams of FFFG black powder and an electric squib. Leads, connected to the squib, pass through the central hole in the propellant grain and extend through the nozzle, where they are connected to the electrical connector cable.

5. PROPELLANT. The Propellant is an extruded cylindrical grain of ballistite. Inhibitor discs, cemented to the ends of the grain, control the burning area and, hence, the pressure developed.

6. GRID. The grid supports the powder grain. During burning, it prevents the powder grain from sliding rearward and clogging the nozzle opening.

7. NOZZLE. The nozzle is a steel venturi through which the gases flow. It directs the gas jet in the desired direction and also provides for the expansion of the gases in the exit cone.

8. NOZZLE CLOSURE. The nozzle closure seals the rear end of the motor. It is crimped to the electrical connector cable, providing a moisture proof seal.

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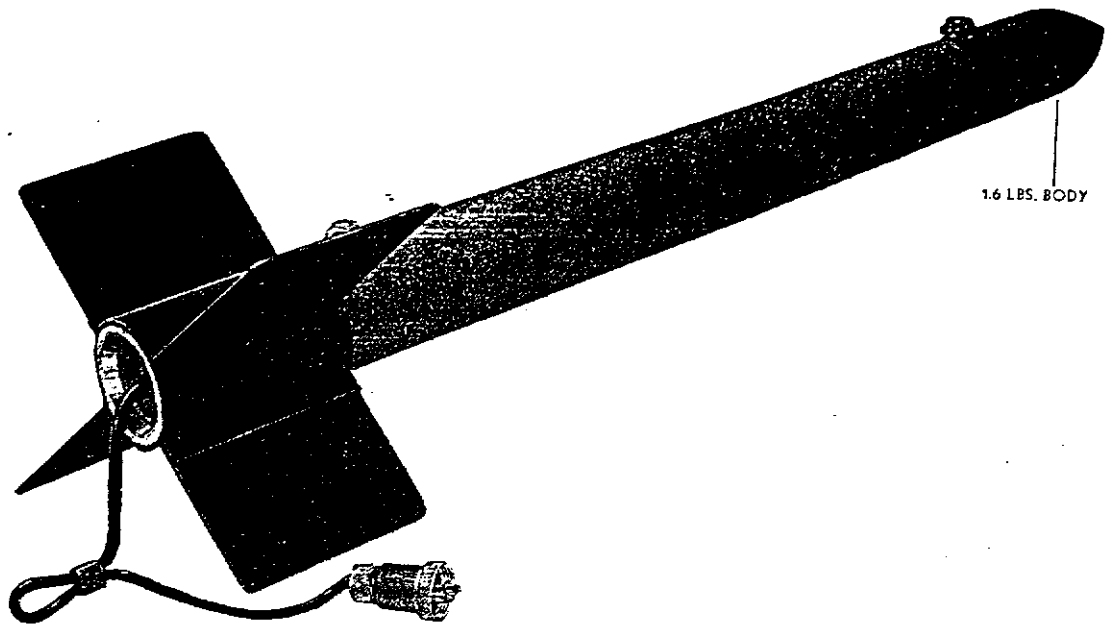


Figure 1.—2.25-inch Subcaliber Aircraft Rockets

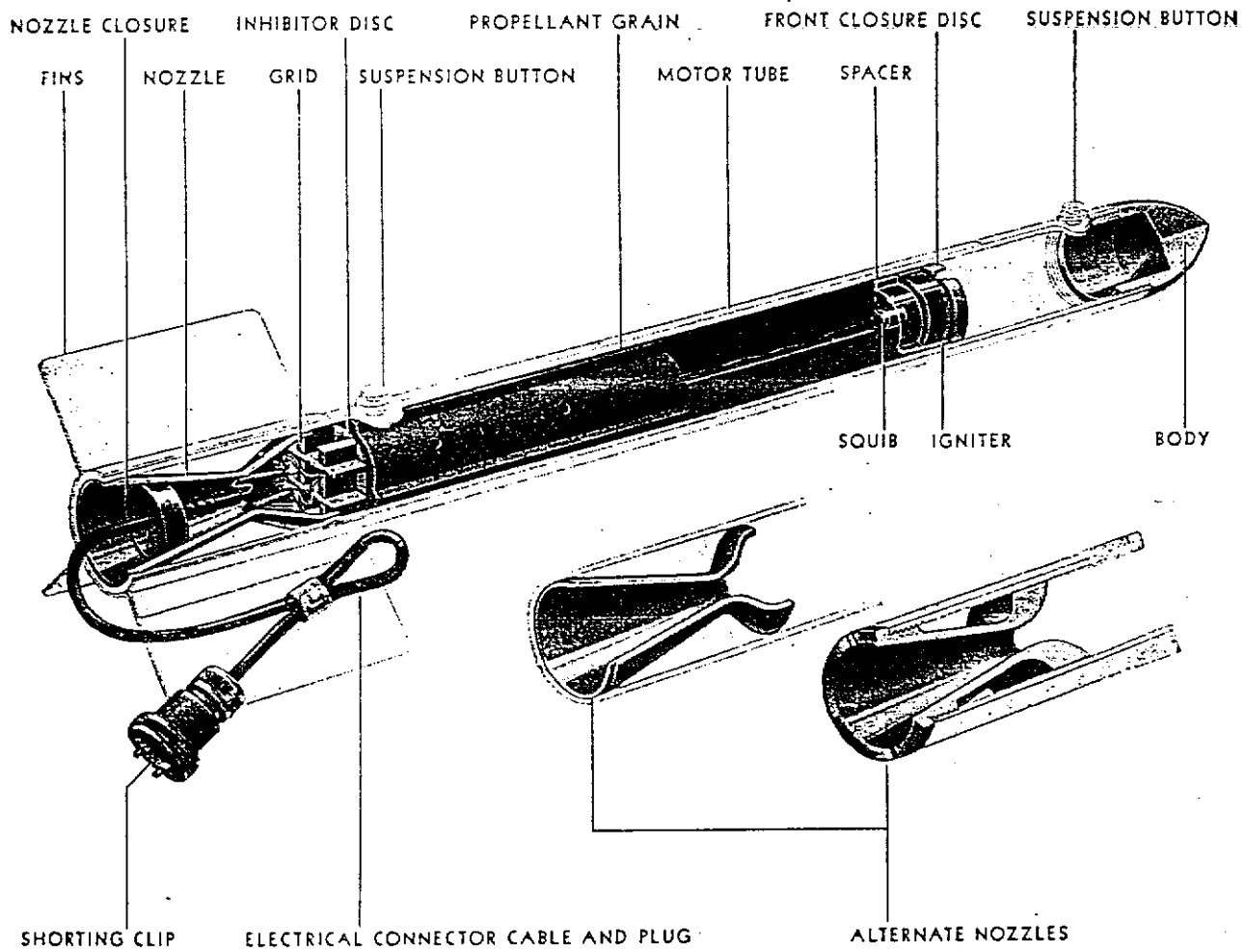


Figure 2—Descriptive View of Rocket

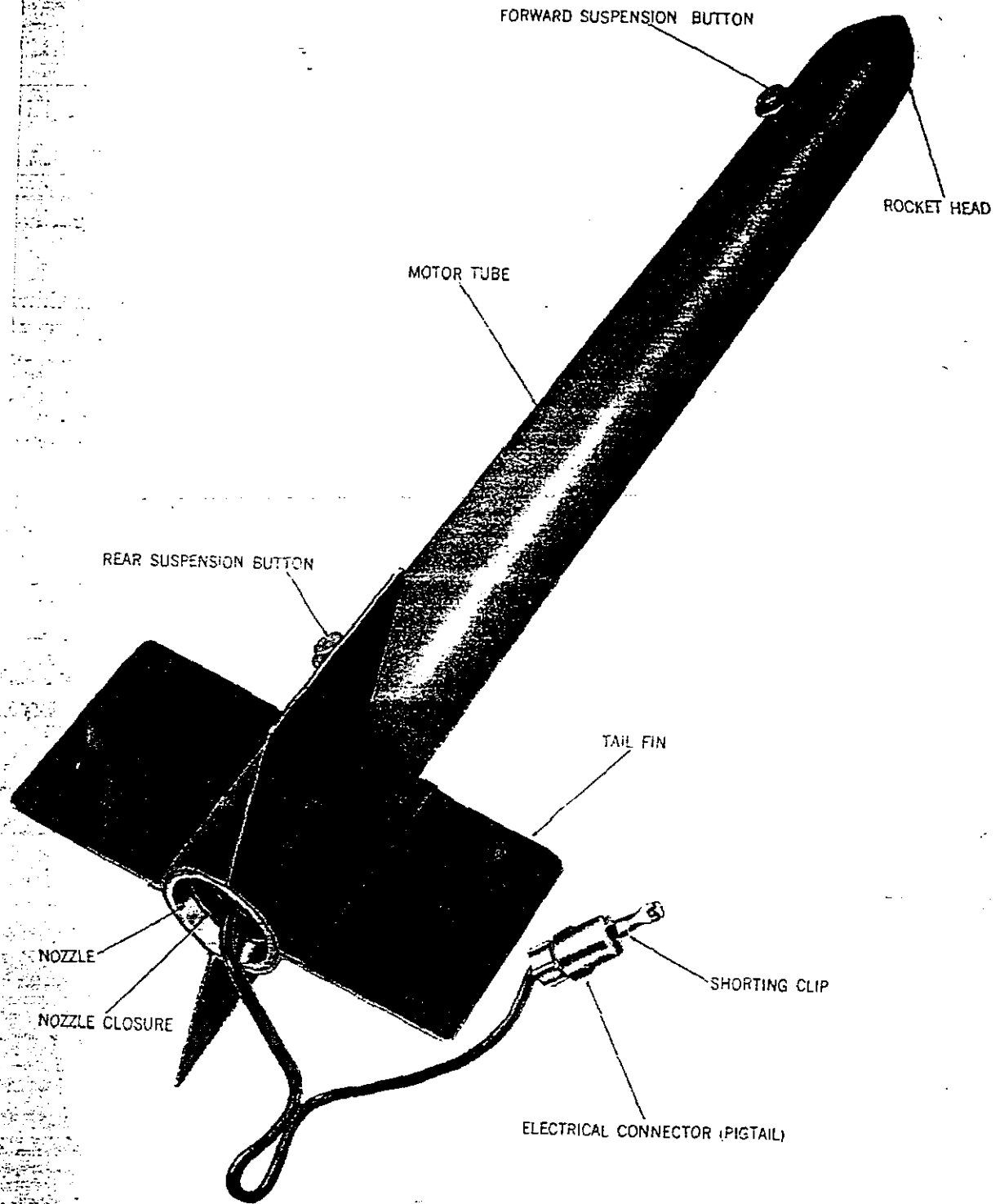


Figure 17—2.75 Subcaliber Aircraft.

CHAPTER 3 AIRCRAFT ROCKETS

Section I. 2.0-INCH ROCKETS

56. General

The 2.0-inch fin-stabilized aircraft rocket is a newly designed rocket for forward firing from an aircraft rocket launcher. The rocket is fitted with a high-explosive head and is stabilized in flight by four pivoted fins that are folded within the rocket during packing and shipping. Electrical energy for firing the rocket is derived from the electrical system of the aircraft. A rocket consists of a head, fuze, and motor.

57. Rocket, High-Explosive, 2.0-Inch: Aircraft, M48 (T214E5)

a. This rocket is provided with high-explosive head M2 (T2032E1) and fuze with BSDS rocket fuze M409 (T2033E2). The 2.0-inch rocket motor M13 (T2007E3) consists of the motor tube, composite propellant M22 (T22), and igniter M46 (T36). Refer to chapter 4 for discussion of composite propellants.

b. The rocket is identified by the folding fins. Painting and marking for identification are in accordance with the scheme prescribed in TM 9-1900.

c. As packed, the folded fins are protected by the safety shorting cup, which is fitted over the aft end of the motor. The safety shorting cup must be removed before firing.

58. Rocket, Practice, 2.0-Inch, Aircraft, M49 (T215E5)

This rocket is intended for use as practice ammunition. It is identical to the rocket M48 (par. 57) except that it is provided with inert practice head M3 (T2033E1) and dummy rocket fuze M410 (T2062) instead of head M2 and fuze M409.

Section II. 2.25-INCH ROCKETS

9. General

a. *General Discussion.* The 2.25-inch, fin-stabilized, subcaliber aircraft rocket (fig. 35) is a Navy type used by the United States Air Force for forward-firing from an aircraft rocket launcher.

The rocket is used as practice ammunition in place of the 5.0-inch rocket HVAR which it simulates ballistically. The 2.25-inch rocket is fired from the 5.0-inch rocket launcher Mk 5 adapted for this use by adapter Mk 6. Two lug buttons attached to the motor body of the rocket engage the adapter. Electrical energy to fire the rocket is derived from the electrical system of the aircraft. The rocket consists of an inert head and a motor.

b. *Head.* The head Mk 3 Mod 2 and other Mods are hollow and threaded externally at the rear to receive the motor.

c. *Motor.* The motor Mk 11 Mod 0 or 1, Mk 15 Mod 0, or Mk 16 Mod 5 is internally threaded to engage the head. It consists of the motor tube, front closing disk, igniter, propellant, grid, nozzle, nozzle closure electrical cable and igniter plug, suspension buttons and fin assembly. The motor contains the igniter, propellant and grid to position the propellant. Assembled to the motor tube are the nozzle, fin assembly and suspension buttons.

(1) *Fin assembly.* The fin assembly, which is welded to the rear end of the motor, is a sleeve with four equally spaced rectangular fins extending radially.

(2) *Propellant.* The propellant is a single grain Mk 16 Mod 0 or 1 of ballistite. See chapter 4 for detailed information.

(3) *Igniter.* The igniter Mk 112 and Mods is a plastic case containing 14 grams of FFFG black powder and an electric squib. Two lead wires from the squib extend from the igniter passing through the perforation in the propellant grain to the nozzle where they are connected to the electrical cable.

(4) *Igniter plug.* The igniter plug used with motors Mk 11 Mod 0 or 1 and Mk 15 Mod 0 is a Navy type (two-pronged). The igniter plug used with motor Mk 16 and Mods is an Army type (phone-jack).

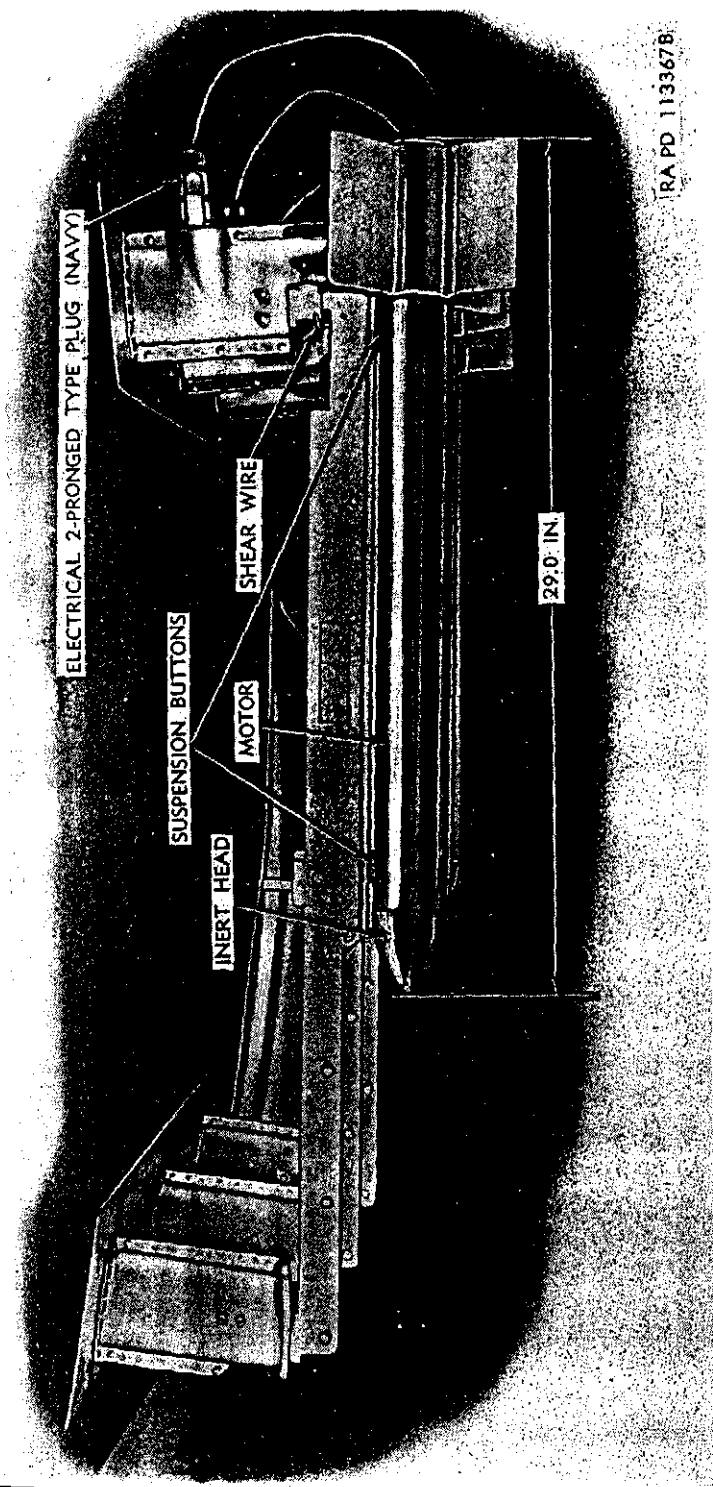
d. *Identification.* The rocket is identified by the two suspension buttons on the motor (fig. 35). Painting and marking for identification are in accordance with the scheme prescribed in TM 9-1900.

e. *Packing.* The rockets are packed as complete rockets (assembled or unassembled), either eight rockets to a wooden box, four rockets to a metal box, or two metal boxes containing four rockets overpacked in a wooden box. Packing and shipping data appear in SM 9-5-1340.

f. *Preparation for Firing.*

(1) *Assembled rockets.*

(a) Remove from packing and inspect for serviceability.



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Figure 85. Rocket, practice, 2.25-inch: SCAR (with launcher).

- (b) Should it be considered necessary to test for continuity, test with the circuit continuity tester (par. 14).
- (2) *Unassembled rockets.*
 - (a) Remove head and motor from packing and inspect for serviceability.
 - (b) Remove shipping plugs. Assemble motor and head tightly.
 - (c) Should it be considered necessary to test for continuity, test with the circuit continuity tester (par. 14).
- (3) *Rockets prepared for firing but not fired.* Restore rockets prepared for firing but not fired to original condition and packing. Mark the package of serviceable rockets for prior use in order that opened packages be kept to a minimum.

g. Precautions in Firing. General precautions are given in paragraphs 29 through 37. In addition, the following are applicable to 2.25-inch rockets:

- (1) All firing circuits should be open at the time the rocket is installed in the aircraft. Before plugging in the igniter plug, the electric socket on the launcher should be tested to be certain that the circuit is open.
- (2) The shorting device should not be removed from the igniter plug until the plug is ready to be inserted in the firing circuit of the aircraft.

60. Rocket, Practice, 2.25-Inch: Mk 1 Mod 0 SCAR

The rocket is stored and issued assembled. It consists of the 2.25-inch rocket head Mk 3 Mods 0, 2, 3 and the 2.25-inch rocket motor Mk 11 Mod 0 or 1. This motor has 18.50-inch spacing of suspension buttons. Table III lists the complete round nomenclature, used by the Navy, and data. The rocket has the Navy-type igniter plug as shown in figure 5.

61. Rocket, Practice, 2.25-Inch: Mk 4 Mod 0 SCAR

The rocket is stored and issued assembled or unassembled—motor and head in the same packing container. It consists of the 2.25-inch rocket head Mk 3 Mods 0, 2, 3, and 2.25-inch rocket motor Mk 15 Mods 0 or 2. This motor has 6.0-inch spacing of suspension buttons. Table III lists the complete round nomenclature, used by the Navy, and data. The rocket has the Army-type igniter plug.

62. Rocket, Practice, 2.25-Inch: Mk 6 Mod 0 SCAR

The rocket is similar to that described in paragraph 61. It differs chiefly in having 2.25-inch motor Mk 16 Mods 4, 5, and 6 and 18.50-

let the wire loop slip between the
 notch and the flange on the socket
 by this means effectively attached
 (fig. 47).
 igniter plugs in the normal fashion
 rocket igniter plug will be plugged
 connector.

Table II. Components Comprising Complete Rounds of Aircraft Type Rockets and Related Data

Head			Motor			Fuze		Velocity (fps)	Use
Diameter (in.)	Mark and Mods	Filler	Diameter (in.)	Mark and Mods	Propellant grain	Nose	Base		
2.0	M2	-----	2.0	M13	M22	None	M409	-----	Service
2.0	M3	Steel	2.0	M13	M22	None	M410	-----	Practice
2.25	Mk 3 Mod 2 Mod 3	Zinc Mal. Iron	2.25	Mod 0 Mk 11 Mod 1	Mod 0 Mk 16 Mod 1	None	None	1,130	Target practice (subcali- ber for 5.0-inch rocket)
2.25	Mod 0 Mk 3 Mod 2 Mod 3	Steel Zinc Mal. Iron	2.25	Mk 15 Mod 0 Mod 2	Mk 16 Mod 1	None	None	1,130	Target practice (subcali- ber for 5.0-inch rocket)
2.25	Mod 0 Mk 3 Mod 2 Mod 3	Steel Zinc Mal. Iron	2.25	Mod 4 Mk 16 Mod 5 Mod 6	Mk 16 Mod 1	None	None	1,130	
2.75	Mk 1	COMP B	2.75	Mk 1 or Mk 2	Mk 31	PI M406	None	2,300	Service
2.75	Mk 1 Mods	HBX-1	2.75	Mk 1 Mod 3 or 4	Mk 31	Mk 176 Mk 178	None	2,300	Service
2.75	Mk 1 Mods	HBX-1	2.75	Mk 2 Mods	Mk 43 Mods	Mk 176 Mk 178	None	2,300	Service
2.75	Mk 1 Mods	HBX-1	2.75	Mk 3 Mods	Mk 43 Mods	Mk 176 Mk 178	None	2,300	Service
2.75	Mk 5 Mod 0	COMP B	2.75	Mk 2 Mods	Mk 43 Mods	Mk 181	None	2,300	Service (armor pier

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Table II. Components Comprising Complete Rounds of Aircraft Type Rockets and Related Data—Continued

Head			Motor			Fuze		Velocity (fps)	Use
Diameter (in.)	Mark and Mods	Filler	Diameter (in.)	Mark and Mods	Propellant grain	Nose	Base		
2.75	Mk 1 (inert)	Inert	2.75	Mk 2 Mod 5 Mk 1 Mod 3 or 4 Mk 3 Mods	Mk 31	Inert	None	2,300	Practice
2.75	Mk 1 (inert)	Inert	2.75	Inert	-----	Inert	None	-----	Drill
5.0	Mk 6 Mods	TNT	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0 or 1	Mk 164 Mod 0	1,325	Service
5.0	Mk 6 Mod 4	TNT	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0	Mk 164 Mod 0	1,325	Service
5.0	Mk 6 Mods	Plaster	5.0	Mk 10 Mods	Mk 18 Mod 0	None	None	1,325	Practice
5.0	Mk 6 Mods	Plaster	5.0	Mk 2 Mod 3	None	None	None	None	Drill
5.0	Mk 25 Mod 1	COMP B	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0	None	1,325	Service (armor piercing)

Table III. Physical and Ballistic Data for Aircraft Type Rockets

Size of rocket	2.25-inch		
	ROCKET, PRACTICE 2.25-INCH: SCAR.	ROCKET, PRACTICE 2.25-INCH: SCAR.	ROCKET, PRACTICE 2.25-INCH: SCAR.
Army Complete Round Nomenclature.	ROCKET, PRACTICE 2.25-INCH: SCAR.	ROCKET, PRACTICE 2.25-INCH: SCAR.	ROCKET, PRACTICE 2.25-INCH: SCAR.
Navy Complete Round Nomenclature.	2.25-inch Rocket Mk 1 Mod 0 (aircraft practice).	2.25-inch Rocket Mk 4 Mod 0 (aircraft practice).	2.25-inch Rocket Mk 6 Mod 0.
HEAD—Mark and Mod	Mk 3 Mods	Mk 3 Mods	Mk 3 Mods
Length (in.)	3.75	3.75	3.75
Diameter (in.)	2.25	2.25	2.25
Weight (lb)	1.60	1.60	1.60
Type of filler	solid	solid	solid
Motor—Mark and Mod	Mk 11 Mod 0 or 1	Mk 15 Mod 0 or 2	Mk 16 Mod 4, 5, or 6
Length (in.)	26.20	26.20	26.20
Diameter (in.)	2.25	2.25	2.25
Weight (lb)	10.40	10.40	10.40
Model of propellant	Mk 16 Mod 1	Mk 16 Mod 1	Mk 16 Mod 1
Weight of propellant (lb)	1.75	1.75	1.75
FUZE—type, Mark and Mod	None	None	None
ROCKET (assembled)			
Length (in.)	29.20	29.20	29.20
Weight (lb)	12.00	12.00	12.00
Velocity (max) (fps)	11.30	11.30	
Temperature limits (° F.)	20 to 110	20 to 110	20 to 110
Burning time (static) (sec)	0.79 to 0.37	0.79 to 0.37	0.79 to 0.37
Burning time (effective) (sec)	0.64 to 0.10	0.64 to 0.10	0.64 to 0.10
Burn-out point (ft from launcher)	440 to 230	440 to 230	440 to 230

**PHYSICAL CHARACTERISTICS OF 2.25 SUBCALIBER AIRCRAFT ROCKETS
MAJOR COMPONENTS OF THE ROCKETS**

Head					Motor									
Mark	Mod	Material	Length In.	Weight Lbs.	Designation		Propellant		Grain	Igniter		Length In.	Weight Lbs.	
					Mark	Mod	Mark	Mod	Weight Lbs.	Mark	Mod			
1	0	Steel	3.75	1.6	10	0	16	0	1.75	12	2	26.0	10.25	
1	1	Zinc	3.75	1.6	10	1	16	1	1.75	12	2	26.0	10.25	
2	0	Steel	8.75	8.6	11	all	16	1	1.75	12	0	26.0	10.25	
3	0	Steel	3.75	1.6	12	0	17	0	1.12	13	1	26.0	9.6	
3	1	Zinc	3.75	1.6	13	all	17	0	1.12	13	0	26.0	9.6	
3	2	Zinc	3.75	1.6	11	all	16	1	1.75	12	2	26.0	10.25	
3	3	Cast Iron	3.75	1.6	11	all	16	1	1.75	12	2	26.0	10.25	

ASSEMBLY SHEET

Complete Round Designation	Weight Lbs.	Length In.	Motor		Head		Subcaliber Designed For:
			Mark	Mod	Mark	Mod	
2.25 TA001	11.85	29	10	0	1, 3	all	3.5-inch Aircraft Rocket
2.25 TA002	11.85	29	10	1	1, 3	all	3.5-inch Aircraft Rocket
2.25 TA003	18.85	34	10	0	2	0	5.0-inch Aircraft Rocket
2.25 TA004	18.85	34	10	1	2	0	5.0-inch Aircraft Rocket
2.25 TA005	11.85	29	11	all	1, 3	all	3.5-inch Aircraft Rocket
2.25 TA006	18.85	34	11	all	2	0	5.0-inch Aircraft Rocket
2.25 TA007	11.2	29	12	0	1, 3	all	5.0-inch Aircraft Rocket
2.25 TA008	11.2	29	13	all	1, 3	all	5.0-inch Aircraft Rocket

SHIPPING AND STOWING WEIGHTS AND DIMENSIONS

Designation		No. Rockets Per Box	Box Size			Cu. Feet	Weight When Packed
Mark	Mod		Length (in.)	Width (in.)	Height (in.)		
1	0	4	29.03	11.22	11.87	2.24	68
2	0	4	29.03	11.22	11.87	2.24	80
3	0	8	30.1	17	12	3.56	126.8

RESTRICTED

3

Section VI

5-INCH ROCKETS

39. DESCRIPTION.

a. **General.** The 5-inch rocket is designed for firing from aircraft rocket launchers of the post type (zero-length). Included in this category, because of similarity in use and construction, are: (1) high-velocity aircraft rocket, 5"0 HVAR; (2) aircraft rocket, 5"0 AR; (3) 3.5-inch aircraft rocket, 3"5 AR; and (4) 2.25-inch subcaliber rocket, 2"25 SCAR.

b. **Head.** The 5-inch rocket head is an adaptation of an anti-aircraft artillery shell. It is designed for both nose fuze and base fuze although either may be replaced by a steel plug. The HVAR head is threaded externally at the base for assembly of the 5-inch motor; the AR head has an adapter threaded internally for assembly of the 3.5-inch motor. The same 3.5-inch motor is used with a solid head to make up the 3.5-inch AR rocket. The 2.25-inch subcaliber rocket head is solid, for target practice, and is adapted for a 2.25-inch motor.

c. **Motor.** All motors for aircraft rockets are similar in construction except for size. They are threaded forward for attachment of the head and have nozzle and fin assembly to the rear. Front and rear openings are protected by waterproof disks. The igniter is assembled in a flat container in the front end of the motor. The propellant consists of a single grain. The igniter lead wires pass through the length of the motor and out through the nozzle and closing disk, and are connected to a plug.

d. **Fuzes.** Base fuzes assembled to the 5-inch rocket head are of the pressure-arming, impact-operating type (PIR) (par. 53). Nose fuzes for the 5-inch heads are of the vane (propeller)-arming, impact-operating type (par. 51), some of which require the use of an arming wire similar to bomb fuzes. The arming mechanism is similar to that of a bomb shackle. The rocket can be fired with the nose fuze armed or safe, thus making selection between superquick action of nose fuze and delay action of base fuze possible at the time of firing.

5-inch Rockets

e. Data.	5:0 HVAR	5:0 AR	3:5 AR	2:25 SCAR
Length	68.9 in.	65.8 in.	54.7 in.	29.2 in.
Weight	134 lb	85.5 lb	54.7 lb	11.9 lb
Range (maximum effective).....	4,000 yd	2,000 yd	4,000 yd	2,000 yd
Velocity (max)	1,350 ft per sec	760 ft per sec	1,150 ft per sec	1,170 ft per sec
Temperature limits	0 to +120 deg F	0 to +120 deg F	0 to +120 deg F	0 to +120 deg F
Burning time	1.4 to 0.9 sec	1.5 to 0.61 sec	1.5 to 0.61 sec	0.91 to 0.38 sec
Burn-out point (static firing) (feet from launcher)	575 to 950 ft	230 to 530 ft	350 to 800 ft	230 to 480 ft
Head, length	16.73 in.	18.3 in.	10.35 in.	3.7 in.
Head, diameter	5 in.	5 in.	3.5 in.	2.25 in.
Head, weight	45.5 lb	48 lb	20 lb	1.6 lb
Head, weight of filler	7.5 lb	8 lb	—	—
Motor, diameter	5 in.	3.25 in.	3.25 in.	2.25 in.
Motor, length	51.4 in.	46 in.	46 in.	26 in.
Motor, propellant, weight	24.8 lb	8.5 lb	8.5 lb	1.75 lb
Nose fuze, model	Mk149	Mk149	Mk149	None
Nose fuze, type	AIR-SQ	AIR-SQ	AIR-SQ	—
Base fuze, model	Mk159	Mk159	None	None
Base fuze, type	PIR-0.015- sec delay	PIR-0.015- sec delay	—	—

f. Preparation for firing.

(1) Remove components from packings and inspect for serviceability. Rocket heads should be inspected to see that fuze and adapter threads are clear, that nose fuze well contains an auxiliary booster, and that heads adapted for base fuze have the base fuze assembled. Motors should be inspected to see that they are free from dents, that threads are clear, that closing disks and short circuit clips are effectively in place, that fins are not bent, and that lugs appropriate to the launcher or adapter are securely in place. Fuzes should be inspected as specified for the particular fuze (sec. IX).

(2) Remove shipping plugs and caps and assemble motor and head. Tighten with strap wrenches. If necessary, assemble fin to motor.

(3) Assemble fuze to head as prescribed by paragraph on the particular fuze (sec. IX).

(4) Remove shorting clip from igniter plug and safety wire from fuze after rocket is loaded on the launcher.

*5-inch Rockets***g. Precautions.**

(1) Be sure that rockets adapted for base fuze have the fuze assembled. If such a rocket is fired with the base fuze missing, the head will detonate on the launcher when the rocket is fired.

(2) In case of misfire, wait 10 minutes before approaching the launcher. If the igniter has fired, base fuzes must be regarded as armed and the round handled with extreme care until it can be destroyed.

40. MODELS.**a. Differences in various models are described below:**

(1) 5"0 HVAR. The 5"0 rocket heads Mk5 and Mods and Mk6 and Mods are essentially the same except for details of the base fuze assembly. The 5"0 rocket motors differ principally in the fin assembly; Mk1 and Mk2 Mod0 had fins welded to the motor; Mk2 Mod2 had fins attached to a sleeve which is assembled to the motor as issued; and Mk2 Mod3 has fins issued separately.

(2) 5"0 AR. The 5"0 rocket head Mk1 can be distinguished from the HVAR by the internally threaded motor adapter. The various modifications of the 3"5 rocket motor Mk7 are in details of nozzle construction.

(3) 3"5 AR. The 3"5 rocket head has been manufactured in TNT-, FS-, WP-, and special-loaded models. However, the only types currently issued through Army ordnance channels are the solid shot Mk2 and Mk8.

(4) 2"25 SCAR. The subcaliber rocket is supplied in two types to match trajectories of the 5"0 HVAR and 5"0 AR, respectively. This was formerly accomplished by providing a light and a heavy head. At present the weight of the head is kept constant and the motor varied. The 2"25 rocket head Mk1 and Mods or Mk3 and Mods is used with 2"25 rocket motor Mk10 and Mods (fast motor) to match the trajectory of the HVAR; and with the 2"25 rocket motor Mk12 (slow motor) to simulate the AR.

OP 1239

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Chapter 1

DESCRIPTION

Introduction

The 5"0 Rocket (5"0 Motor, Fin Stabilized) is a self-propelled missile designed for shipboard launching or for forward firing from aircraft. The rockets consist of two parts: the head which is essentially a fuzed projectile and the motor which propels the projectile. Various mods of heads and motors are used in different 5"0 rocket assemblies. Approximate weights of these assemblies range from 130 pounds to 150 pounds, and they are approximately 69 inches to 85 inches long. Figures 1 and 2 show the assembly arrangement.

Rockets and associated equipments that are used by carrier based aircraft are of primary concern in the instructions given in this book.

Rocket Motors

The 5"0 Rocket (5"0 Motor, Fin Stabilized) may have either a 5"0 Rocket Motor Mk 2 all Mods or a 5"0 Rocket Motor Mk 10 all Mods. These rocket motors are similar in construction except that the Mk 2 Mods have a two-prong type electrical connector while the Mk 10 Mods require the jack plug type. Both types of rocket motors are pipelike assemblies with venturi-tube exhausts for burning the cruciform-type propellant grain. The rocket is propelled by the exhaust gases from the burning propellant.

The principal components of a typical 5-inch rocket motor, listed below, are shown in figure 2.

- | | |
|--------------------|-----------------|
| Nozzle plate | Suspension lugs |
| Front closure disc | Propellant |
| Fin assembly | |

Nozzle Plate. The nozzle plate, screwed into the rear of the motor tube, has eight nozzles arranged in a circle, each sealed by a light steel cup and sealing compound, and a central blowout nozzle. The central nozzle is sealed by a copper disc 0.024 inch thick, insulated against motor heat by asbestos and hard fiber plugs. The thickness of the disc is such that it shears and blows out at an ap-

proximate motor pressure of 2400 p. s. i. One of the eight periphery nozzles accommodates the electrical connector cable. During shipment, a dome-shaped steel shipping cap fits into the nozzle ring of the nozzle assembly to protect the nozzle plate and the electrical cable and plug assembly.

Front Closure Disc. The front end of the motor is sealed by a front closure disc. This disc has a smaller blowout disc in its center to allow passage of motor gases to the pressure-armed base fuze in the rocket head. A felt pad and felt washers are glued to the inside of the front closure disc to support the propellant grain and to allow for its thermal expansion. During shipment, a motor thread protector extends into the motor the same depth as the head, and seats on a felt washer. The center of the thread protector is a light metal cup that will blow out and render the motor nonpropulsive in the event of an accidental ignition before assembly.

Fin Assembly. The fin assembly consists of four stabilizing fins welded to a cylindrical sleeve. The sleeve is slipped onto the nozzle end of the motor and clamped between the rear suspension lug band and the nozzle ring attached to the nozzle. To prevent rotation of the fins, the sleeve interlocks with projections on the rear suspension lug band.

Suspension Lugs mounted on bands for attachment to the rocket motor are provided to suspend the rocket from the rails or T-slots of the rocket launchers. The motor is arranged so that the bands may be mounted at various positions for the different launchers. The 5"0 Rocket Motor Mk 10 Mod 5 has six, the Mk 2 Mod 4 and the Mk 10 Mod 4 have four, and the Mk 2 Mod 3 has two lug band locating holes. See NAVORD ¹⁴⁶⁷ ~~OMBATT-50~~ for proper positioning of bands for use on various launchers.

Propellant. The propellant is a cruciform-shaped grain of ballistite weighing 24 pounds. It is ignited by a metal case igniter containing 55 grams of black powder.

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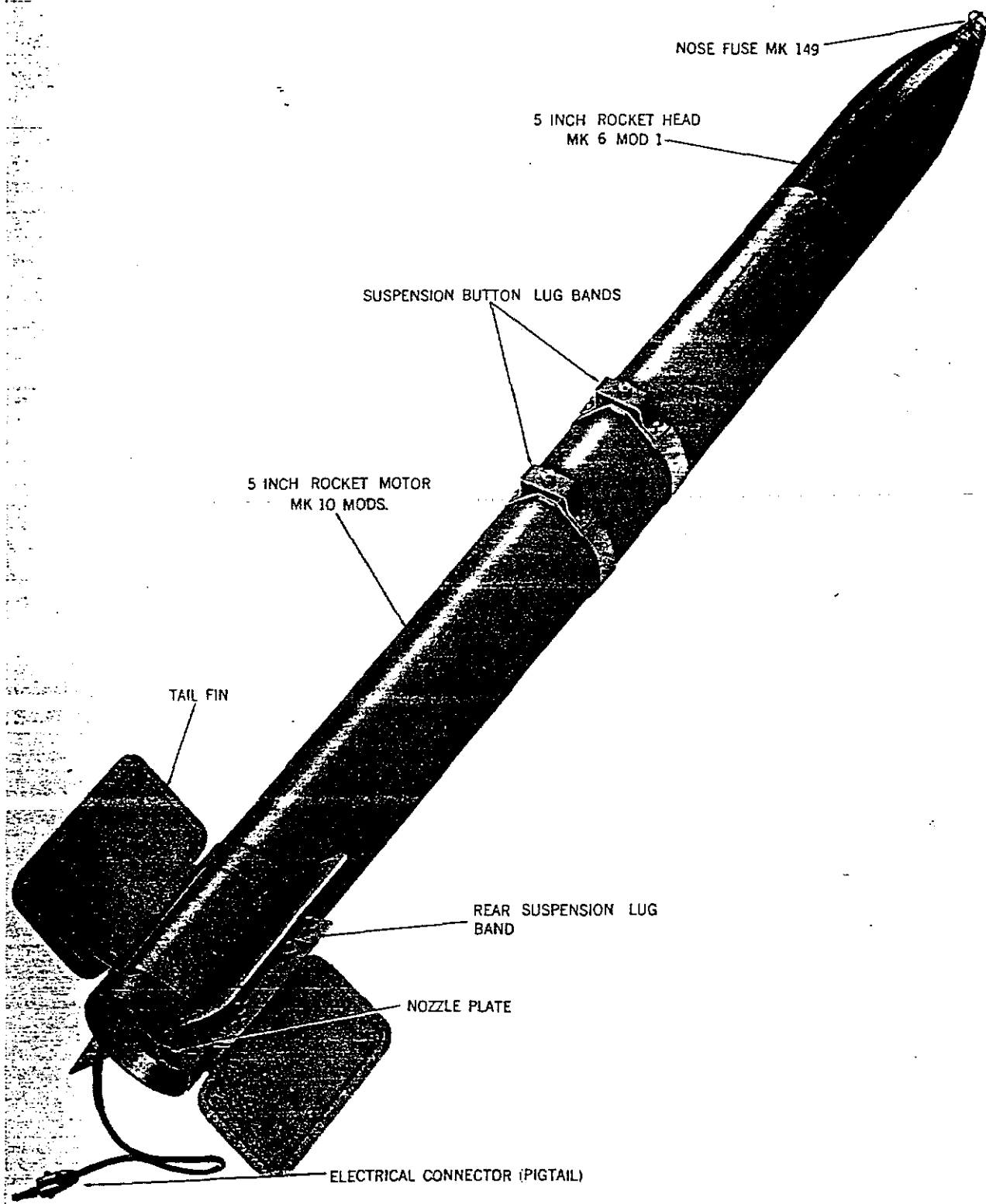


Figure 1—5'0 High-Velocity Aircraft Rocket.

(d) Should it be considered necessary to test for continuity, test with the circuit continuity tester (par. 14).

(e) If required, modify rocket fin as indicated in paragraph 74.

(2) Restore rockets and fuzes prepared for firing but not fired to original condition and packing. Mark the package of serviceable rockets for prior use in order that opened packages be kept to a minimum.

d. Precautions in Firing. General precautions are given in paragraphs 3 through 17. In addition, the following are applicable to 5.0-inch rockets:

(1) All firing circuits should be open at the time the rocket is installed in the aircraft. Before plugging in the igniter plug, the electric socket on the launcher should be tested to be certain that the circuit is open.

(2) The shorting device should not be removed from the igniter plug until the plug is ready to be inserted in the firing circuit of the aircraft.

(3) Do not attempt to remove base fuze under any circumstances.

(4) Do not fire rockets with flat nose plug in place.

72. 5.0-Inch High-Explosive Rocket Heads (HVAR)

a. General Discussion. Listed below are the various HVAR heads which are assembled with 5.0-inch rocket motors to form HVAR complete rounds. Complete round data and nomenclature are given in tables II and III. The TNT loaded heads Mk 6 and Mods are shipped with permanently installed base fuze Mk 159 Mod 1 or Mk 64 and Mods and a shipping cap which is replaced by nose fuze Mk 149. The head Mk 6 Mod 4 is specially deep cavitized to receive VT fuze. The head Mk 25 Mod 1 is a shaped charge type (having an internal copper cone) loaded with composition B. As shipped, the head Mk 25 Mod 1 has a nose shipping plug, which is replaced by nose fuze Mk 149, and a shipping cap to protect the base threads.

HEAD, HIGH-EXPLOSIVE, 5.0-INCH ROCKET: HVAR, Mk 6 Mods 0, 1, 2, and 3 TNT loaded, w/fuze, rocket base AN-Mk 159 (Mk 159 Mod 1) or AN-Mk 164 (Mk 164) and Mods installed

HEAD, HIGH-EXPLOSIVE, 5.0-INCH ROCKET: HVAR, Mk 6 Mod 4, TNT loaded, adapted for fuze, VT, M403, w/fuze, rocket, base AN-Mk 159 (Mk 159 Mod 1) and Mods or AN-Mk 164 (Mk 164) and Mods installed

HEAD, HIGH-EXPLOSIVE, 5.0-INCH ROCKET: HVAR, Mk 25 Mod 1 COMP B loaded, unfuzed

HEAD, INERT, 5.0-INCH ROCKET: Mk 6 and Mods.

b. Fuze. The 5.0-inch HVAR head Mk 6 Mods is permanently fuzed with base fuze Mk 159 Mod 1 or Mk 164 and Mods. The head Mk 6 and Mods and Mk 25 Mod 1 receive nose fuze Mk 149 Mod 0 or 1 after removal of the nose shipping cap. Head Mk 6 Mod 4 receives VT fuze M403 or M403E2 (Mk 172 Mod 2).

c. Identification. Painting and marking for identification are in accordance with the scheme prescribed in TM 9-1900.

d. Packing. The 5.0-inch HVAR head Mk 6 and Mods is packed two per wooden box or 48 per pallet (except Mk 6 Mod 4). The head Mk 25 Mod is packed one per wooden box with two lug bands, with or without arming wire. Nose and VT fuzes are packed 20 per wooden box. VT fuzes are packed one per metal can, nine cans per wooden box. Packing and shipping data appear in SM 9-5-1340.

73. 5.0-Inch Rocket Motors

Listed below are various similar 5.0-inch rocket motors which are assembled with 5.0-inch HVAR heads to form complete rockets as indicated in tables II and III. The motor Mk 10 differs from the motor Mk 2 principally in having an Army igniter plug instead of a Navy (bayonet-type) plug. The 5.0-inch motor is externally threaded at the forward end to engage the head. It consists of the motor tube, front closure disk, igniter, propellant, nozzle plate, suspension lugs and fin assembly. The motor contains the igniter, propellant and grid to position the propellant. Assembled to the motor tube are the nozzle, fin assembly and suspension lugs.

MOTOR, 5.0-INCH ROCKET: Mk 2 Mod 3.

MOTOR, 5.0-INCH ROCKET: Mk 2 Mod 3 (w/bayonet-type connector plug).

MOTOR, 5.0-INCH ROCKET: Mk 10 Mods 4 and 5.

MOTOR, 5.0-INCH ROCKET: Mk 10 Mods 4 and 5 (w/electrical connector Mk 11 Mod 5 or M3).

MOTOR, 5.0-INCH ROCKET: Mk 10 Mod 7 (w/o fin).

MOTOR, 5.0-INCH ROCKET, EMPTY: Mk 2 Mod 3.

MOTOR, 5.0-INCH ROCKET, INERT: Mk 2 Mod 3.

a. Fin Assembly. The fin assembly, which is clamped to the rear end of the motor, is a sleeve with four equally spaced rectangular fins extending radially.

b. Propellant. The propellant is a single grain Mk 18 Mod 0 of ballistite. Refer to chapter 4.

c. Igniter. The igniter is a metal can containing 55 grains of black powder and an electric squib. Two lead wires from the squib extend from the igniter passing through the perforation in the pro-

pellent grain to the nozzle where they are connected to the electrical cable and igniter plug (connector).

d. *Identification.* The motor is identified by the two suspension lugs (Fig. 37). Painting and marking for identification are in accordance with the scheme for Navy rockets prescribed in TM 9-1900.

e. *Packing.* Inert or propellant loaded motors are packed (with or without fins) one per wooden box. Empty motors are packed three per wooden box. Packing and shipping data appear in SM 9-5-1340.

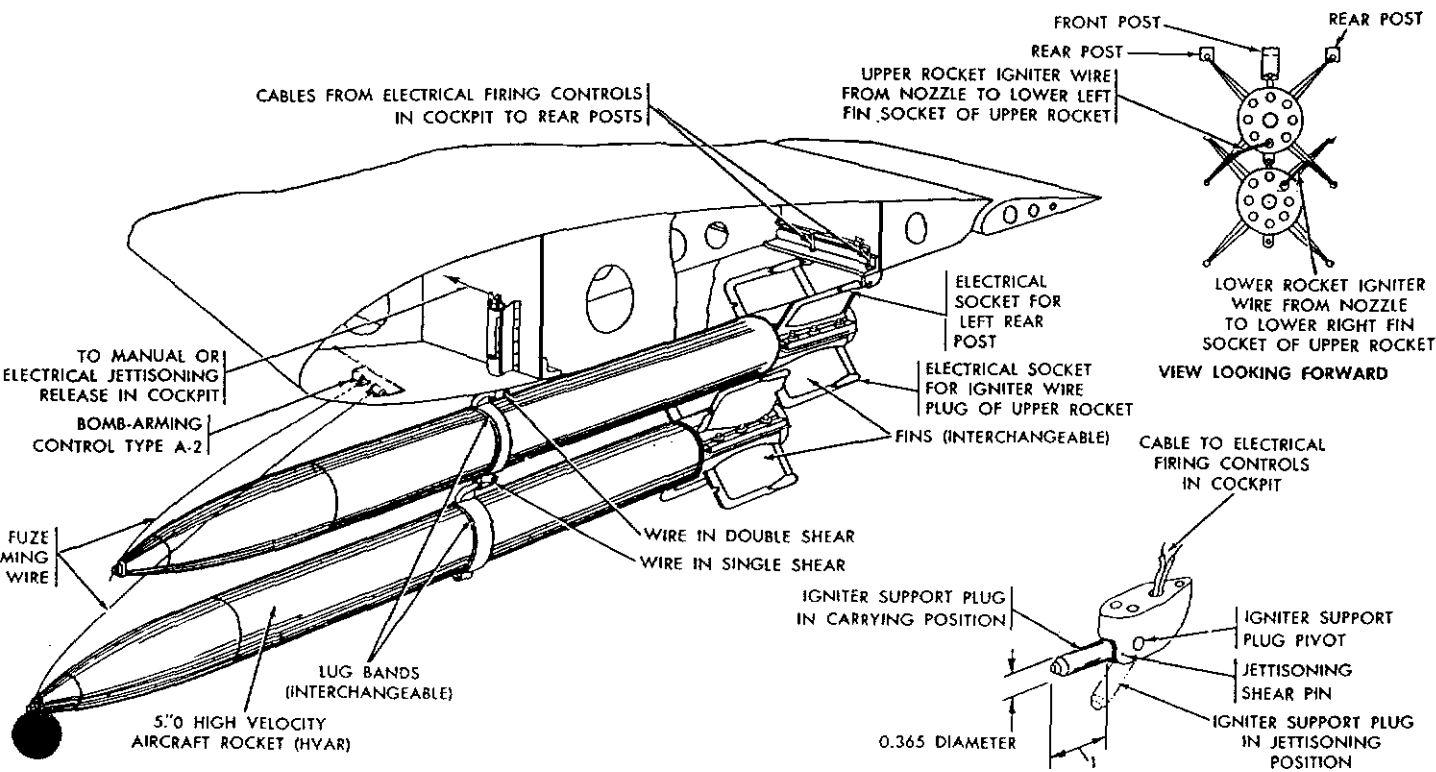
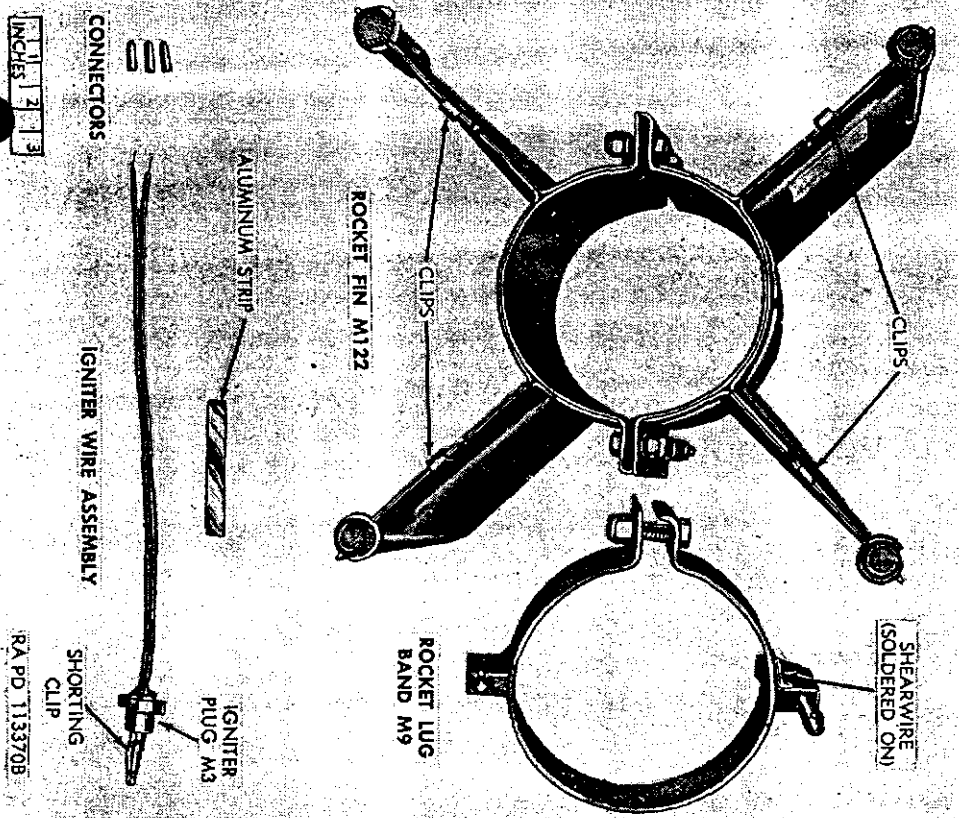


Figure 39. Schematic arrangement of 5.0-inch high-velocity aircraft rocket, as modified by rocket kit M34, installed in retractable jettisoning aircraft launcher.

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX E

REPORTS/STUDIES

APPENDIX E
REPORTS/STUDIES

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- E-1 DERP FUDS INPR (Site No. J09CA020900) FDE (Ref B-7).
- E-2 DERP FUDS INPR (Site No. J09CA020900) Project
Description and Recommendations (Ref B-7).
- E-3 OEW Removal Action Final Report Exerpts (Ref B-8).
- E-4 Rancho Santa Margarita Welcome Packet Exerpts (Ref
B-16).

**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR FORMERLY USED SITES
INVENTORY PROJECT REPORT
FINDINGS AND DETERMINATION OF ELIGIBILITY
RANCHO SANTA MARGARITA
(TEMECULA BOMBING RANGE)
ORANGE COUNTY, CALIFORNIA
PROJECT NO. J09CA020900**

FINDINGS OF FACT

1. A project to remediate ordnance and explosive waste contamination is proposed for the former Temecula Bombing Range in Rancho Santa Margarita, California, as abandoned ordnance on and off site could pose an explosion hazard. The project will include preparing a feasibility study and an environmental impact statement or assessment, as well as removing and disposing of ordnance.
2. On 21 February 1944, the Department of Defense (DOD) acquired an 1800-acre agricultural property at Trabuco Mesa by condemnation for military purposes. The public road along the northern boundary of the site remained open to the public. A lease was negotiated with the landowner for the period subsequent to 1 July 1944.
3. The Navy established the Temecula Bombing Range on the property. From 1944 through 1946, Navy pilots used the site as a bombing and gunnery practice range in connection with the El Toro Marine Corps Air Station (MCAS). No data were found to indicate that DOD added structures or other improvements to the property. Although no DOD records were located regarding the type or number of devices used for aircraft target practice at the Temecula Bombing Range, ordnance including 3-pound, 4-pound, and 25-pound (Mark 76) practice bombs (also called "target markers") and 2.25-inch, 3.5-inch, and 5-inch practice rockets has been found shallowly buried or at ground surface. The practice bombs contained an expelling charge of smokeless powder and a marker load of stabilized red phosphorous or zinc oxide, while the practice rockets were completely inert.
4. In 1945, the United States Government paid a total of \$5,925 to landholders and tenants in compensation for the condemnation and taking of property (including crops and crop damages). On 1 April 1946, the 1800-acre property was released to the estate of Jerome O'Neill, its original owner, when the condemnation action was terminated. No restoration provision was present in the termination document, nor were there any other conditions or restrictions.
5. In the years following DOD use of the site, hundreds of practice bombs and target markers were found and stockpiled by persons farming the property. Currently the Santa Margarita Company is developing the land for residential and commercial use. In 1984, before construction began, the company requested that the El Toro MCAS Joint Explosive Ordnance Disposal Unit remove the stockpiled ordnance and conduct a surface sweep of the southern end of the site, the apparent target area. At that time, the Marines removed fourteen truckloads of certified empty practice ordnance from the site. Of the 5,600 pounds of target markers found, 448 pieces were suspected of containing spotting charges and were destroyed. Eleven percent of the pieces destroyed contained residual materials of the firing assembly and expelling charge; of those, two percent contained residual materials of the marker load. During development of the property, contractors have discovered many more pieces of practice ordnance. In 1988, the developer asked the Marines to remove a large quantity of ordnance that contractors had amassed during grading and their own ordnance-screening operations. When the

Marines were unable to comply within the desired time frame, the Santa Margarita Company had the ordnance removed to its present location in Chiquita Canyon, away from the area being developed.

DETERMINATION

Based on the foregoing findings of fact, the site has been determined to have been formerly used by DOD. Moreover, it is determined that an environmental restoration project, to the extent set out herein, is an appropriate undertaking within the purview of the Defense Environmental Restoration Program, established under 10 U.S.C. 2701 et seq., for the reasons stated above.

1 Feb 91
DATE

Wayne J. Scholl
Wayne J. SCHOLL
Colonel, Corps of Engineers
Chief, Environmental Restoration
Division
Directorate of Military Programs

**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR FORMERLY USED SITES
INVENTORY PROJECT REPORT
PROJECT DESCRIPTION
RANCHO SANTA MARGARITA
(TEMECULA BOMBING RANGE)
ORANGE COUNTY, CALIFORNIA
PROJECT NO. J09CA020900**

1. INTRODUCTION

In response to a request from the Commanding General of the Marine Corps Air Station (MCAS) at El Toro, California, the Huntsville Division of the U.S. Army Corps of Engineers (USACE) initiated a preliminary assessment at the former Temecula Bombing Range in Rancho Santa Margarita, California. The Los Angeles District of the USACE contracted Strata Technologies Inc. (STRATA), a wholly owned subsidiary of AeroVironment Inc., to conduct the preliminary assessment (Contract J09CA020900). On 1 November 1989, STRATA performed a site inspection in order to verify the presence of ordnance and explosive wastes (OEW) and to determine the site's current condition.

2. PROJECT DESCRIPTION

A project to remediate OEW contamination is proposed. This project will include preparing a feasibility study and an environmental impact statement or assessment, as well as removing and disposing of ordnance found onsite or stockpiled offsite. The ordnance consists of practice bombs (also called "target markers") and practice rockets. Specific ordnance found at the site has included 3-pound, 4-pound, and 25-pound (Mark 76) practice bombs and 2.25-inch, 3.5-inch, and 5-inch practice rockets. The practice bombs contained an expelling charge of smokeless powder and a marker load of stabilized red phosphorous or zinc oxide, while the practice rockets were completely inert. There is no record of any "live" loads being used at this site, and the area has been surveyed for ordnance by the developer. As contractors working on the site discover ordnance, it is stockpiled in a secluded canyon behind two locked gates. This ordnance poses a potential hazard to both contractor personnel and the general public. Under OEW risk assessment procedures (Appendix A), the site is assigned a Risk Assessment Code (RAC) of 2.

3. SITE DESCRIPTION

a. **Site Location.** The 1800-acre project site is located on the Trabuco Mesa in Rancho Santa Margarita, Orange County, California. The site lies east of the El Toro MCAS and north of Mission Viejo.

b. **Public Use of the Site.** The site is within the Rancho Santa Margarita planned community, much of which is still under construction. The development will include housing units, schools, parks, and commercial and industrial facilities.

c. **Public Accessibility of the Site.** In the residential area at the north end of the site, access is unrestricted. Access to those portions of the site currently under construction is limited primarily to construction crews and other parties involved in developing the property; this limited access includes an area at the south end of the site that the Santa Margarita Company Construction Department has identified as the main target zone for the bombing range. (In a golf course within this target zone, the Santa Margarita Company placed some of the ordnance

encountered during grading and covered it with 20 to 30 feet of fill.) Access is restricted in the area where ordnance has been stockpiled, a side tributary of Chiquita Canyon. This stockpile area is away from construction operations and developed areas and is secured by two locked fences.

d. **History of Access.** After the Department of Defense (DOD) ended its use of the site in 1946, the original landholders resumed farming Trabuco Mesa. Access would have been limited or unrestricted during this time. The site served as farmland until development commenced in the mid-1980s.

e. **History of Injuries.** No historical records were found to indicate that anyone was injured by OEW at the site. No injuries caused by OEW have been reported by community residents or construction personnel.

f. **Professional/Official Safety Reports.** In a letter dated 21 August 1984, J.R. Robson, Chief of Staff at the El Toro MCAS, stated "that additional [target] markers probably remain in the area, that the area may be hazardous, and that [warning signs] should be posted." Robson recommended that developers and buyers be informed of the potential dangers of handling practice ordnance. The Santa Margarita Company provided information to homeowners, renters, and developers describing the site's history as a practice range and advising caution in the event a target marker should be encountered.

g. **Condition of Structures When Transferred.** No information was found to indicate that DOD erected structures at the site, nor were any data located concerning DOD use of structures that may have been present when military use of the property began.

**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR FORMERLY USED SITES
INVENTORY PROJECT REPORT
PROJECT RECOMMENDATIONS
RANCHO SANTA MARGARITA
(TEMECULA BOMBING RANGE)
ORANGE COUNTY, CALIFORNIA
PROJECT NO. J09CA020900**

Further Department of Defense response should involve a project to remediate ordnance and explosive waste (OEW) contamination at the site. The proposed project, which will be conducted by the Los Angeles Division, should include a feasibility study and an environmental impact statement or assessment, as well as ordnance removal and disposal. Under OEW risk assessment procedures, the site's Risk Assessment Code (RAC) is 2. RAC 2 sites require action to mitigate the hazard or protect personnel. A feasibility study is appropriate.

FINAL REPORT

DACA87-91-D-0010
ENVIRONMENTAL REMEDIAL SERVICES
AT SITES WEST OF THE MISSISSIPPI
TEMECULA PRACTICE RANGE
DELIVERY ORDER NO. 0003

PREPARED FOR:

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION
P.O. BOX 1600
HUNTSVILLE, AL 35807-4301

PREPARED BY:

IT CORPORATION
DAVID ERB
336 W. ANAHEIM STREET
WILMINGTON, CA 90744

JANUARY 15, 1992

FINAL REPORT
TEMECULA PRACTICE RANGE

1. BACKGROUND

- 1.1 The former Temecula Practice Range in Rancho Santa Margarita located approximately ten miles east of El Toro Marine Corps Air Station and five miles northeast of the town of Mission Viejo, California was the site for Delivery Order No. 0003 of Contract No. DACA87-91-D-0010 as issued by the United States Army Corps of Engineers (USACE), Huntsville Division to IT Corporation (IT) February 20, 1991.
- 1.2 The site was used during World War II as a practice bombing range for the USMC. Several military conducted sweeps were undertaken after WWII, with the last occurring in 1984.
- 1.3 During the period after the Temecula range was decommissioned, the O'Neill family ranch workers continued to find practice rounds which they stock piled.
- 1.4 During the initial development of the property by the Rancho Santa Margarita Company, a considerable number of practice bombs were found by the construction crew while building the golf course; a part of the new development known as Rancho Santa Margarita. The soil was excavated, then was processed through a screening plant on three occasions. The practice rounds were then transported to a ravine on the O'Neill Ranch for storage. The site from where the rounds were removed was graded, covered with nearly 20 feet of soil, and compacted, creating one of the fairways for the golf course.

2. SCOPE OF WORK

2.1 The Scope of Work (SOW) and Delivery Order No. 0003 requested IT to perform the following tasks:

2.1.1 Perform a Site Visit

2.1.2 Develop a Work Plan

2.1.3 Develop a Health and Safety Plan

2.1.4 Identify the applicable Regulatory Requirements

2.1.5 Conduct a Public Meeting

2.1.6 Perform a Subsurface clearance of 100 acres

2.1.7 Dispose of the Ordnance stock pile

2.1.8 Turn-in the recovered Ordnance and Scrap

2.1.9 Perform quality control measures

2.1.10 Record and Submit Video Tape and Still Photographs of the project.

2.1.11 Submit a removal and closing report

3. ACTUAL TASKS COMPLETED

- 3.1 On May 13, 1991, Messrs. Enzo Zoratto, Frank Javorka, David Erb, Joe Alexander, IT project management, and Jim Pastorick from the qualified subcontractor visited the job site. (See attached letter no. 305781-IT-0004).
- 3.2 IT undertook the task of writing the Work Plan and on June 26, 1991, as outlined in the Delivery Order, the rough draft was forwarded to the USACE Project Manager for review.
- 3.3 IT, as a part of the Work Plan development, also developed a Health and Safety plan for the project.
- 3.4 IT was not able at that time to identify any agencies which would have any jurisdiction over the project.
- 3.5 At the direction of the USACE Project Manager no public meeting was held by IT.
- 3.6 At the direction of the USACE Project Manager no surface clearance was performed of the 100 acres as outlined in the Delivery Order.
- 3.7 On August 1, 1991, IT mobilized the project and deployed the following equipment.
 - 3.7.1. IT Emergency response unit used as a portable office.
 - 3.7.2 Cat 215 track hoe.
 - 3.7.3. Water truck
 - 3.7.4 Five Pressure Washers
 - 3.7.5 Front End Loader
 - 3.7.6 Dump Truck
 - 3.7.8 Miscellaneous support vehicles
- 3.8 The project as outlined in the field notes details the daily activities as seen from the field superintendent's prospective (See attachment 1).
- 3.9 A site map was prepared of the immediate ravine in which the target markers were removed (See attachment 2).

4. DELIVERABLES

Delivery Order No. 0003 required the contractor to account for and deliver the following items.

- 4.1 Man Hours worked on Site
- 4.2 Vehicle mileage
- 4.3 Flying hours
- 4.4 Number of flights
- 4.5 Detailed List of UXO encountered
- 4.6 Detailed list of DD Form 1348-1
- 4.7 Detailed photographic record
- 4.8 Weight tickets of DRMO scrap turn-in

4.1.1 The total manhours worked on site was (366) 733

4.1.2 The total vehicle mileage was 1097

4.1.3 The total flying hours were (58) 96

4.1.4 The total number of flights was (8) 10

4.1.5 The following is a detailed list of UXO encountered and removed.

4.1.5.1 2.25in. subcaliber aircraft rockets
17,919 total.

4.1.5.2 5 in. HVAR Rocket warheads 74 total.

4.1.5.3 3 in. Rocket motors 290 total.

4.1.5.4 3 lb. Practice Bombs 890 total.

4.1.5.5 25 lb. Practice Bombs 129 total.

4.1.5.6 3.5 in rocket motors 7 total.

4.1.6 The items listed above were disposed of as scrap which totaled -
122,780 lbs> and was transported to DRMO after inspection and inert
certification (See attached weight tickets).

4.1.7 The following items were considered possible hazardous and were
removed and disposed of by the ARMY EOD under the
direction of the site USACE Representative.

4.1.7.1 2.25 in. Subcaliber aircraft rockets 2 total.

4.1.7.2 5 in. HVAR Rocket warheads 56 total.

4.1.7.3 3 lb. Practice Bombs 121 total.

4.1.7.4 25 lb. Practice Bombs. *26 ea*

5. CONCLUSION

The USACE Site Manager concluded the project on November 5, 1991 and IT proceeded to regrade and demobilize the project. The project had no reportable accidents and was concluded in a professional manner.

- 2 October, 1991 UXB Project Supervisor (PS) travels to work site, contacts IT Project Supervisor (IT)
- 3 October, 1991
1. PS meets IT and they conduct a tour of the work site. Site preparations are underway and the work area has been cleared and graded.
 2. PS and IT also check on progress of equipment delivery and meet with IT Project Manager to discuss project start-up.
- 4 October, 1991
1. PS visits work site to ensure delivery of equipment.
 2. PS meets with El Toro DRMO to reconfirm their requirements for scrap turn-in.
 3. PS visits with El Toro EOD Team.
- 5 October, 1991
1. Work crew (Levesque, Campbell, McKaig) arrives at airport. PS meets crew and transports them to hotel.
- 6 October, 1991 No work accomplished.
- 7 October, 1991
1. All personnel meet at site to begin work.
 2. IT and PS hold daily safety brief.
 3. Work crews begin removal of UXO from ravine.
 4. Begin cleaning recovered UXO with high pressure wash at 1500.
- 8 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued removing UXO from canyon and cleaning removed items in preparation for turn-in to DRMO.
- 9 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued removing UXO from canyon and cleaning them with high pressure washer.
 3. EOD picked up 93 items that could not be certified as inert and vented.
- 10 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued UXO removal and cleaning. The pressure wash operation is very time consuming and IT agrees to add another pressure washer to the project to expedite the UXO cleaning process.
- 11 - 13 October, 1991 No work accomplished.
- 14 October, 1991
1. IT and PS hold daily safety brief.
 2. Continue UXO removal and cleaning with two pressure washers.
- 15 October, 1991
1. IT and PS hold daily safety brief.
 2. Continue UXO removal and pressure washing. Each technician can

clean approximately 100 UXO/hour.

- 16 October, 1991
1. IT and PS hold daily safety brief.
 2. Continue UXO removal and pressure washing. One pressure washer breaks down and is returned for repair.
- 17 October, 1991
1. IT and PS hold daily safety brief.
 2. Completed UXO removal
 3. Continued pressure washing with three washers. One breaks down and is returned for repair.
 4. 70th Army EOD picks up 49 potentially hazardous UXO.
 5. Dump truck and front end loader are delivered to site for scrap turn-in. Excavator is returned.
- 18 - 20 October, 1991 No work accomplished.
- 21 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued cleaning recovered UXO with three pressure washers.
 3. Delivered one truckload of scrap (9,660 lb.) to San diego DRMO.
- 22 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued cleaning UXO with three washers.
 3. loaded and delivered 7,320 lb. of scrap to DRMO San Diego.
- 23 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued cleaning UXO with three washers.
 3. Delivered 2 truck loads of scrap (6,480 lb. and 11,120 lb.) to DRMO San Diego.
- 24 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued cleaning UXO with three pressure washers.
 3. Delivered one load (10,220 lb.) to DRMO San Diego.
- 25 October, 1991
1. 8,720 lb. of scrap delivered to DRMO San Diego.
- 26 and 27 October, 1991 No work accomplished.
- 28 October, 1991
1. IT and PS hod daily safety brief.
 2. Continued cleaning UXO with three washers.
 3. Delivered 11,320 lb. of scrap to DRMO San Diego.
- 29 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued cleaning UXO with three washers.
 3. Delivered 11,720 lb. of scrap to San Diego DRMO.
 4. conducted QA check of canyon area to ensure location and removal

of all UXO.

- 30 October, 1991
1. IT and PS hold daily safety brief.
 2. Continued cleaning UXO with three washers.
 3. Delivered 10,500 lb. of scrap to DRMO San Diego.
- 31 October, 1991
1. IT and PS hold daily safety brief.
 2. Completed UXO cleaning operation.
 3. Delivered 11,720 lb. of scrap to DRMO San Diego.
 4. Corps of Engineers representative conducted QA checks of work site.
- 1 - 3 November, 1991 No work accomplished.
- 4 November, 1991
1. IT and PS hold daily safety brief.
 2. Delivered final two loads of scrap (24,000 lb. combined) to DRMO San Diego.
 3. Used front end loader to remove and search the top six inches of soil in the work area to remove all miscellaneous metal pieces.
 4. Replaced all soil and graded the work area to conform to the natural surroundings.
- 5 November, 1991
1. All UXB personnel and equipment demobilize from work site.

RANCHO MISSION VIEJO
Santa Margarita Company
FACT SHEET

(Rev. 1/1/86)

NAME: Rancho Mission Viejo

SIZE: Approximately 40,000 acres

LOCATION: Southeastern Orange County

STREET ADDRESS: 28811 Ortega Highway
San Juan Capistrano, California 92675

MAILING ADDRESS: Post Office Box 9
San Juan Capistrano, California 92693

DEVELOPMENT OFFICE: 31726 Rancho Viejo Rd. Suite 101 & 120
San Juan Capistrano, California 92675

FIELD OFFICE: 28672 Ortega Highway
San Juan Capistrano, California 92675

TELEPHONE: 714/831-6450 (Headquarters) 714/493-1571 (Operations)

MANAGEMENT: Santa Margarita Company
Richard J. O'Neill, Chairman
Anthony R. Moiso, President/Chief Executive Officer
Thomas C. Blum, Executive Vice President
Gilbert G. Aguirre, Senior Vice President - Ranch
Operations
R. Dana Empringham, Senior Vice President - Chief
Financial Officer
Richard A. Reese, Senior Vice President - Planning
Stephen C. Schrank, Senior Vice President - Development
Michael J. Babbitt, Vice President - Construction
Robert S. Clark, Vice President - Ranch Operations
Evelyn M. McNutt, Vice President - Finance/Management
Services
Donald E. Moe, Vice President - Marketing
Melinda R. Moiso, Corporate Secretary
Rick Niemann, Vice President - Finance/Development
Loia M. Thimmesch, Assistant Corporate Secretary
Ronald H. White, Vice President - Project Development

TOTAL EMPLOYEES: 112

OWNERSHIP: The Santa Margarita Company (corporation)
The San Juan Company (limited partnership) - "Rancho
Mission Viejo"
Trusts
Individuals

- HISTORY:**
- 1882 - 233,000 acres - Rancho Santa Margarita y Las Flores (Santa Margarita, Las Flores, Trabuco, and La Mision Vieja or La Paz) purchased by Richard O'Neill, Sr. and James Flood.
 - 1910 - Ownership passes to O'Neill's son, Jerome.
 - 1923 - Santa Margarita Company established.
 - 1926 - Upon Jerome's death, Jerome O'Neill Trust established. Beneficiaries are his sister, Mary, her family, his brother, Richard, Jr., Richard's wife, Marguerite ("Daisy"), and their two children, Alice and Richard Jerome.
 - Late 1930's - Area (approximately 17,500 acres) of present Caspers Park, Audubon Society, Arriba de Estrella, Coto de Caza sold to Eugene Starr and Ernest Bryant.
 - 1938-42 - Santa Margarita Company dissolved. Camp Joseph H. Pendleton established. Flood half interest (southern half) and half of O'Neill interest (San Onofre) purchased by the Department of the Navy. Rancho Mission Viejo becomes 52,000 acres - all in Orange County.
 - 1943 - Richard O'Neill, Jr. dies.
 - 1950 - O'Neill Park dedicated.
 - 1963-64 - Mission Viejo Company established. 10,000 acres sold.
 - 1967 - Mission Viejo Company ownership changes.
 - 1969 - Agricultural Preserve Agreement (almost 30,000 acres) established with Orange County.
 - 1972 - Mission Viejo Company sold to Philip Morris, Inc.
 - 1981-- Jerome O'Neill Trust ends with Daisy's death.
 - 1981-82 - Plano Trabuco area (5,000 acres) removed from Agricultural Preserve and zoned.
 - 1983 - Santa Margarita Company re-established.
 - 1985 - Rancho Santa Margarita Joint Venture established.

RANCHO SANTA MARGARITA

Target Marker Briefing

I. History

- A. Family ownership for more than 100 years.
- B. Lease of Plano Trabuco to Department of Navy.
 - 1. Practice range location.
 - 2. No known high explosives.
 - 3. Description of practice devices (Exhibit A).
 - 4. Orchard operation.
- C. Rancho Santa Margarita Joint Venture.

II. Development

- A. USMC procedures.
 - 1. Sweeps - visual and metal detection.
 - 2. Disposal.
 - 3. Buried devices.
 - 4. Examination of removed devices.
 - 5. Letter (Exhibit B).
- B. Initial Grading.
 - 1. North Plano.
 - 2. Business Park.
- C. Experts Retained.
 - 1. Purposes.
 - a. Is there any danger.
 - b. Anticipation of (unlikely) litigation.
 - c. Attorney client privilege.
 - d. Results.
 - (i) One percent failed to ignite on impact.
 - (ii) Primer deteriorated. Won't ignite.
 - (iii) Can cause black powder to ignite by heating.
- D. Golf Village.
 - 1. Location of targets (Exhibit C).

2. Grading procedures. The following is a list of the various procedures the Santa Margarita Company Construction Department has followed in order to recover target markers in the Golf Course Neighborhood.
 - a. Determined the target area for target markers and practice rockets.
 - (i) Screened soil from the most concentrated point out to a limit where no target markers have been detected or uncovered.
 - (ii) This area was determined to be within a 400' radius of the center of the impact area or approximately 502,656 square feet.
 - b. The target area was ripped and the soil turned over to a depth of 2'.
 - c. The area was walked, using metal detectors which could detect to a depth of 2'. Target markers and practice rockets were uncovered, hand-picked and then placed in a stockpile.
 - d. We ran all material 2' - 3' deep within the target area thru a 4" vibrating screen. Target markers and practice rockets were hand-picked from the screening operation and placed in the stockpile.
3. Display grading photographs.
4. All remaining material in the target area was removed to the cut depths on the grading plan. The material was placed in a adjacent canyon fill at a depth of 20' - 30' below the current finish grade. This location is in the Hole #8 fairway in the Golf Course Neighborhood.
5. All finish lot pads in the Golf Course Neighborhood, were walked with metal detectors. Any target markers or practice rockets that were detected to a depth of 2 1/2' were uncovered and taken to the stockpile area. Approximately 15 were taken from finish pads.
6. Captain Lindsey of U.S.M.C. El Toro was contacted to remove the stockpile of target markers and practice rockets. Captain Lindsey said the U.S.M.C. did not have the procedure or the funds to dispose of the ordinance material at this time.
7. We moved the ordinance material to a side tributary to Chiquita Canyon. This area is completely away from the development area and was secured by fences.

8. As of this date we have uncovered approximately six (6) more practice rockets during our normal underground construction activities.

III. Disclosure.

- A. Letter to all existing homeowners (Exhibit D).
- B. Escrow disclosure (Exhibit E).
- C. DRE public report (Exhibit F).
- D. Contract language (Exhibit G).
- E. Attendance at pre-meeting.
- F. Newspaper articles (Exhibit H).
- G. Handout to renters (Exhibit I).

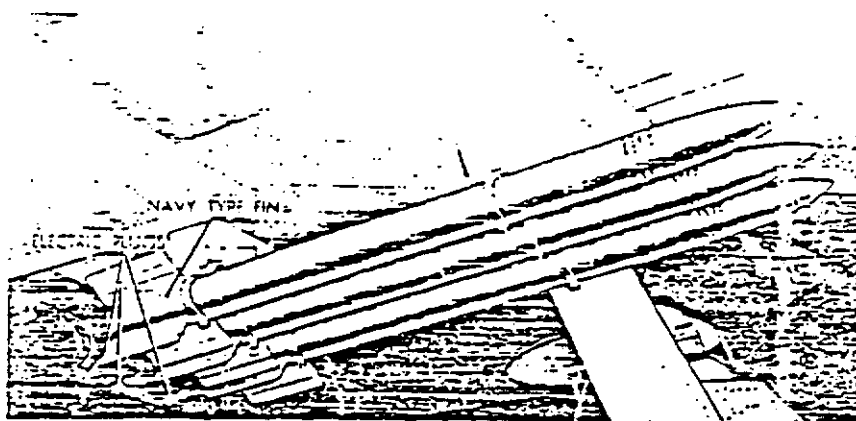
117. Aircraft-Type Rockets

a. General. Several types of Navy rockets are used by the Air Force for forward firing from aircraft fitted with Navy type post (zero length) or rail launchers. One type of Navy rocket (5.0-inch high-velocity aircraft rocket (HVAR)), after replacing the Navy fin by a special Army fin, is used by the Air Force for forward firing from aircraft fitted with the retractable jettisoning launcher.

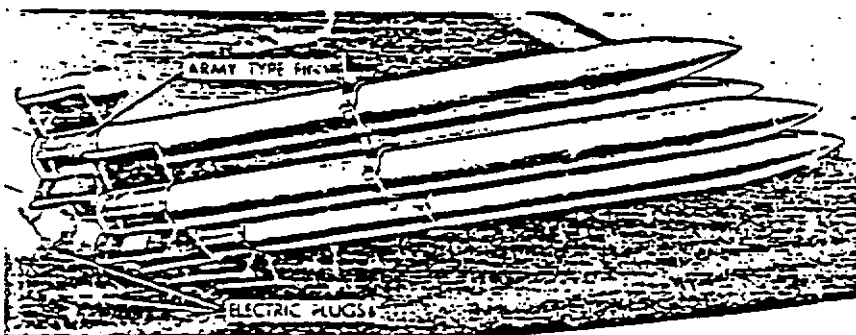
b. 2.25-Inch Rockets. The 2.25-inch forward firing subcaliber aircraft rockets (SCAR-Navy) (fig. 161), which have a 2.25-inch solid head and a 2.25-inch service motor, are used as practice ammunition to simulate the action of the 3.5-inch and 5.0-inch Navy aircraft rockets used by the Air Force. The trajectory and velocity of the 2.25-inch rocket, which is composed of the Mk 3 Mod 2 solid head and the Mk 11 motor, approximate those of the 3.5-inch aircraft service rocket and the 5.0-inch high-velocity aircraft rocket (HVAR). The trajectory and velocity of the 2.25-inch rocket, which consists of the Mk 3 Mod 2 head and the Mk 13 (mods) motor, approximate those of the 5.0-inch aircraft rocket (AR).

c. 3.5-Inch Rockets. The 3.5-inch aircraft rockets (Navy) are fin-stabilized, using 3.5-inch head and a 3.25-inch motor (fig. 162). These rockets are used on Navy or Air Force aircraft in forward firing against light armored vehicles and for penetrating submarines and other light-armored vessels. These have a velocity of 1,140 feet per second. The head is a 20-pound solid steel ogival-nose shot. When fired at 20° (or less) from the horizontal, this rocket has a lethal underwater range of approximately 60 to 120 feet, depending upon the bluntness of particular model of head used. Types of head include the armor-piercing and drill, which have no fuzes, and the chemical (smoke), which has the nose fuze Mk 155 Mod 0. The motor consists of a 3.25-inch steel tube containing a single inhibited cruciform grain weighing 8½ pounds. Inhibitors, sometimes called deterrents, consist of certain types of combustible plastic material that are coated or cemented on parts of a propellant grain to control the rate of burning. At the rear of the motor is the nozzle, which is sealed with a waterproof closure. The motor, which is shipped separately, is provided with front and rear shipping caps to protect it during storage and shipment.

d. 5.0-Inch Aircraft Rockets. The 5.0-inch aircraft rockets (Navy-AR) are fin-stabilized, using the 3.25-inch motor (fig. 163). The head of the service rocket is filled with TNT and equipped with both nose and base fuzes. The motor is the same type as that used with the 3.5-inch rocket (*c* above). The service rocket, which has a velocity of 715 feet per second, is used in Navy or Air Force aircraft fitted with Navy-type post launchers against light shipping, enemy troops and bivouac areas, and light-armored vehicles. Certain model heads are arranged for VT fuzes for air-to-surface firing. The target practice rocket has an inert head that may be fitted with a dummy nose fuze. The drill rocket is completely inert.



A—5.0-INCH HIGH VELOCITY AIRCRAFT ROCKETS ON POST LAUNCHERS—AS USED BY THE NAVY



B—5.0-INCH HIGH VELOCITY AIRCRAFT ROCKETS ON RETRACTABLE JETTISONING LAUNCHERS—AS USED BY THE AIR FORCE

RAPO 167610

Figure 164. 5.0-inch high-velocity aircraft rockets (Navy-HVAR).

e. 5.0-Inch High-velocity Aircraft Rockets. The 5.0-inch high-velocity aircraft rockets (Navy-HVAR) are used for forward firing from Navy or Air Force aircraft against heavy tanks, gun emplacements, bridges, and supply concentrations. This rocket uses a 5.0-inch motor, which contains approximately 24 pounds of propellant. This propellant imparts a velocity to the rocket of 1,360 feet per second, which is nearly double that of the 5.0-inch aircraft rocket (AR) that has the 3.25-inch motor (*d* above). The heads used in the service rounds are: the TNT-filled head (Mk 6 Mod 1) fitted with a nose fuze and a base fuze; the COMP B-filled shaped-charge head Mk 25 Mod 1 fitted with a nose fuze (complete round consisting of the Mk 25 Mod 1 head and the Mk 10 Mod 5 motor (with JPN cruciform grain) is designated Mk 32 Mod 1); and the TNT-filled head (Mk 6 Mod 4), which is deep-cavitized to receive the VT fuze M403 (Navy Model Mk 172 Mod 0) for plane-to-ground (air-to-surface) firing. Head, motor, and fuze are shipped each in separate

223

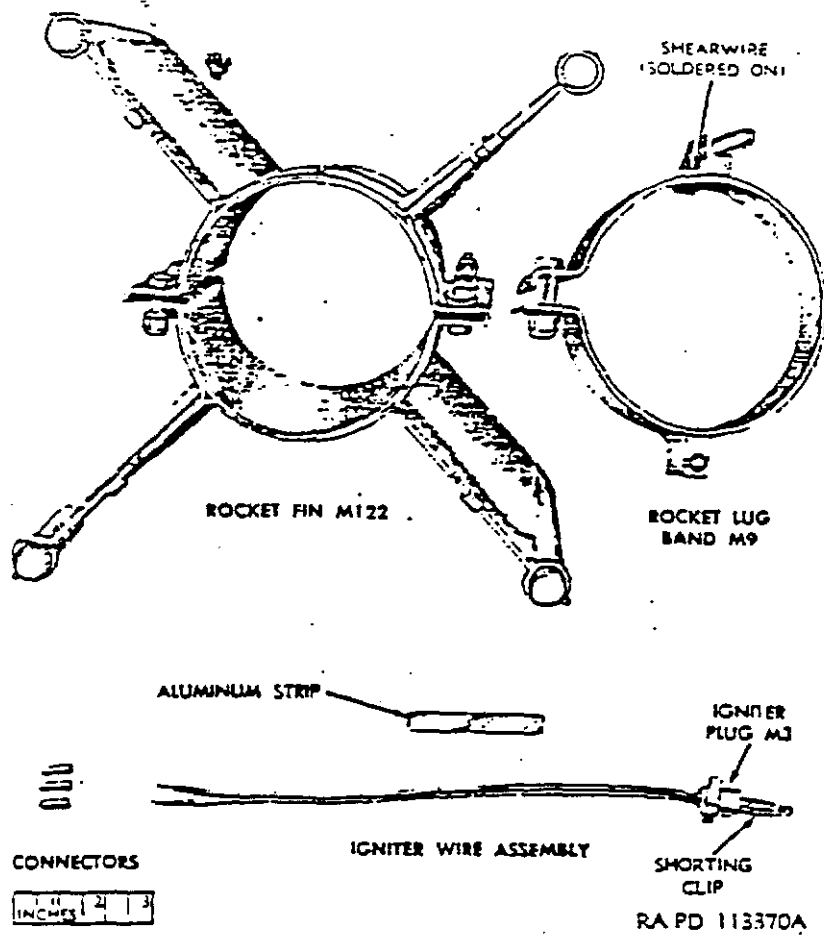


Figure 165. Kit, modification, M34, for 5.0-inch high-velocity aircraft rocket (Navy-HVAR).

containers in a packing box. The head used in the target practice round is the same type as that of the TNT service head except that it is plaster-filled and that it may have a conical nose plug and omits the base fuze.

f. Modification of 5.0-Inch High-velocity Aircraft Rocket (Navy-HVAR). When used by the Air Force, this rocket is modified by removing the Navy fin and replacing it with the Army fin that adapts the rocket for use on the retractable jettisoning launcher with which certain Air Force aircraft are equipped. Aircraft so equipped are also equipped with bomb-arming type controls from which arming wires extend through nose fuze holes provided. The rockets as used on Navy aircraft post launchers are shown in A. figure 164. The rockets as modified for use on Air Force aircraft equipped with retractable jettisoning launchers

PRACTICE BOMB SIGNAL Mk 4 Mods 3 and 4

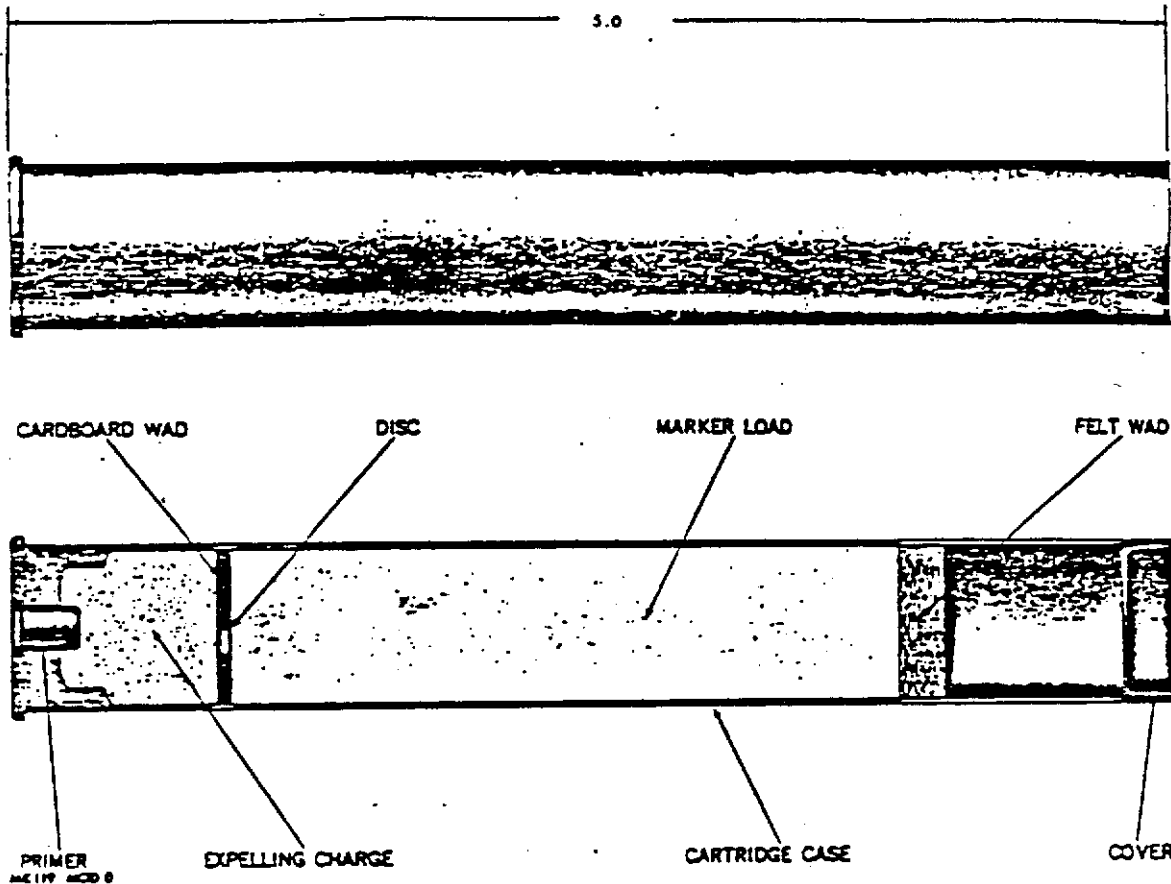


Figure 3-19.—Practice Bomb Signal Mk 4 Mods 3 & 4.

Mark.....	4.....	4.
Mod.....	3.....	4.
General Arrangement.....	398800.....	1211717.
List of Drawings.....	Sk 166560.....	256093.
Length (in.).....	5.0.....	5.0
Diameter (in.).....	0.85.....	0.85.
Weight (lb).....	0.16.....	0.16.
Case Material.....	Aluminum.....	Aluminum.
Expelling Charge.....	Smokeless powder....	Smokeless powder.
Marker Load.....	Stabilized red phosphorous.	Zinc oxide.
Shipping Containers:		
Cardboard Carton.....	200 signals.....	200 signals.
Wood Box.....	25 cartons.....	25 cartons.

General Description

Practice Bomb Signals Mk 4 Mods 3 and 4 are essentially 10-gage shotgun shells of

extra length. They contain an expelling charge of smokeless powder and are primed with a Primer, Mk 119 Mod 0. A pyrotechnic

3-LB MINIATURE PRACTICE BOMB Mk 5 Mods 2 and 3
3-LB MINIATURE PRACTICE BOMB AN-Mk 23 Mod 1
4.5-LB MINIATURE PRACTICE BOMB Mk 43 Mod 1

Mark.....	Mk 5.....	AN-Mk 23.....	Mk 43.....
Mod.....	2 and 3.....	1.....	1.....
General Arrangement.....	452859.....	452860.....	452858.....
List of Drawings.....	Sk 165595.....	Sk 165597.....	Sk 165596.....
Length of Assembled Bomb (in.).....	8.25.....	8.25.....	8.25.....
Diameter (in.).....	2.18.....	2.18.....	2.18.....
Fin Span (in.).....	2.5.....	2.5.....	2.5.....
Weight:			
Without Signal (lb).....	2.56.....	2.87.....	4.31.....
With Mk 4-Type Signal (lb).....	2.68.....	3.00.....	4.43.....
With Mk 5-Type Signal (lb).....	2.62.....	2.94.....	4.37.....
Firing-Pin Assembly.....	Mk 1 Mod 0.....	Mk 1 Mod 0.....	Mk 1 Mod 0.....
Signal.....	Mk 4 Mods or Mk 5 Mod 0.....	Mk 4 Mods or Mk 5 Mod 0.....	Mk 4 Mods or Mk 5 Mod 0.....

General Description

The 3-lb MPB Mk 5 Mods 2 and 3, the 3-lb MPB AN-Mk 23 Mod 1, and the 4.5-lb MPB Mk 43 Mod 1 are similar in physical appearance and differ basically in the metal used to cast the body.

Bomb Mk 5, now obsolescent, is manufactured from zinc alloy and weighs the least of the three bombs. Bomb AN-Mk 23 is made of cast iron. Bomb Mk 43, now obsolete, was manufactured from cast lead and was the heaviest of the three bombs.

The cast body has a bore throughout its transverse axis which houses a signal and firing-pin assembly.

Four fins are cast integrally with the bomb body. A rectangular sheet-metal shroud attached to the fins is used to stabilize the bomb in flight. Two crimps, 180 degrees apart, anchor the shroud to the fin blades.

The firing-pin assembly consists of two shallow metal cups, separated by a spacer which houses the firing pin. A cotter pin through the nose of the bomb body and two recesses in the lip of the forward cup lock the firing-pin assembly and signal in place.

Painting and Marking

Identification data is cast integrally on the body of the bomb during manufacture, and the bomb has no color marking other than that of the cast metal.

Use

The 3-lb MP Bomb Mk 5 is used for bombing practices on armored-deck target boats. The Bomb AN-Mk 23 is authorized for all bombing practices except those involving armored-deck target boats. The 4.5-lb MP Bomb Mk 43, now obsolete, was used for low-altitude, horizontal or dive bombing and on armored-deck target boats. The Bombs Mk 5, AN-Mk 23, and Mk 43 are used with the Mk 4-type signal, which expels a large puff of smoke rearward through the bore of the bomb when detonated by action of the firing pin. They also are used with the Mk 5 type signal, which contains a fluorescein dye and is actuated by a water inertia load on the firing pin. When the Mk 5 type signal is installed, the firing-pin assembly is not used. Special containers are utilized by aircraft to carry and release these bombs.

CHANGE 6 1 APRIL 1966

11-1

Assembly With the Mk 4 Type Signal

CAUTION: Signals and bombs are not to be unpacked in advance of requirements. If unpacked and not used, return them to their original packings.

1. Remove the bomb and the signal from their packings.

2. Remove the cotter pin and the firing-pin assembly from the nose of the bomb. The firing-pin assembly should fit loosely in the bomb and not bind when being removed.

3. Check the bore through the center of the bomb; it must be clean, smooth, and not damaged in any way.

4. Inspect the firing-pin assembly for

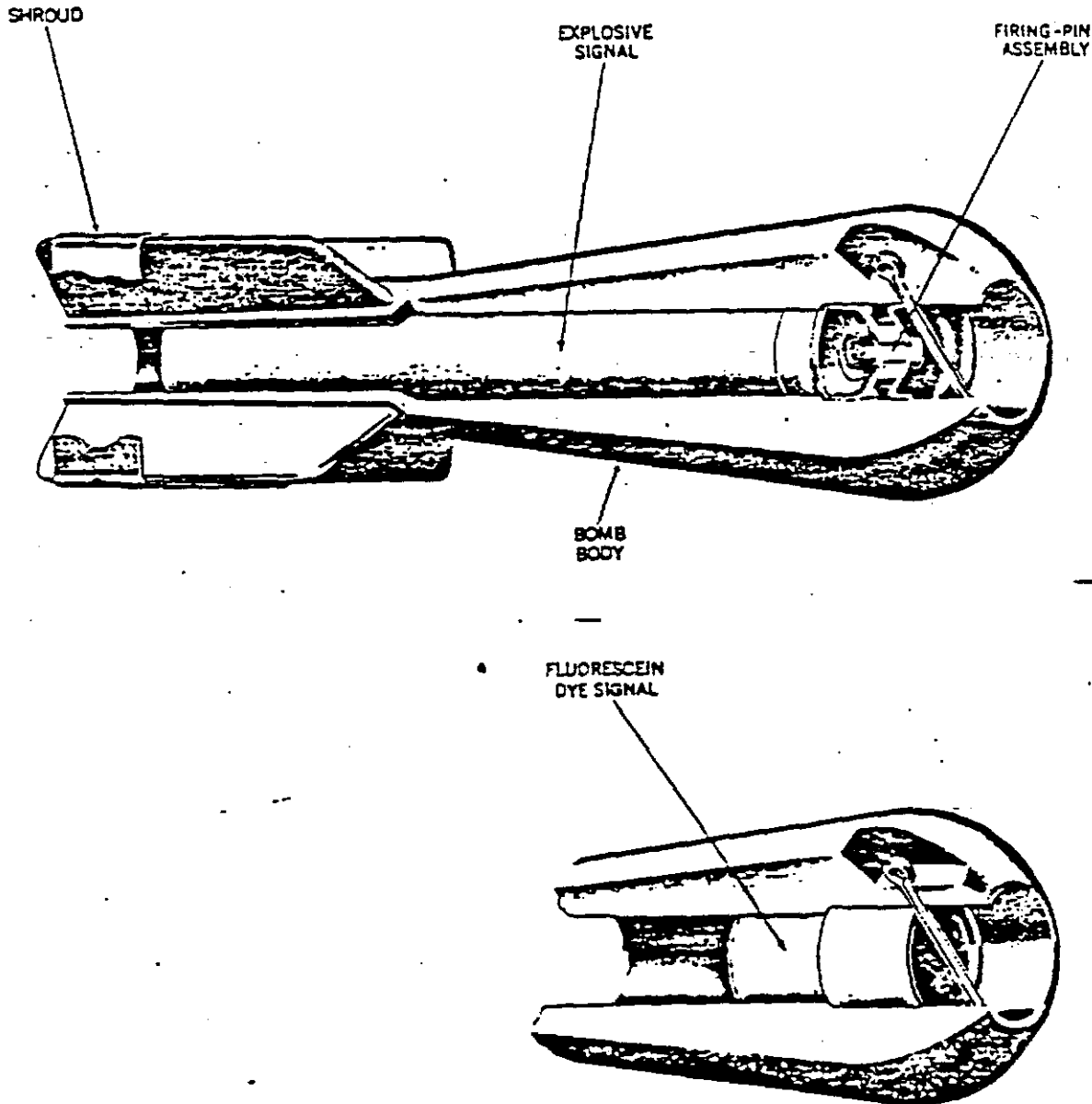


Figure 11-3.—3-lb Miniature Practice Bomb AN-Mk 23 Mod 1, Cutaway View and Detail Showing Signal Mk 5 Mod 0 Installed.

11-3

25-LB PRACTICE BOMB Mk 76 Mods 0, 1, and 2

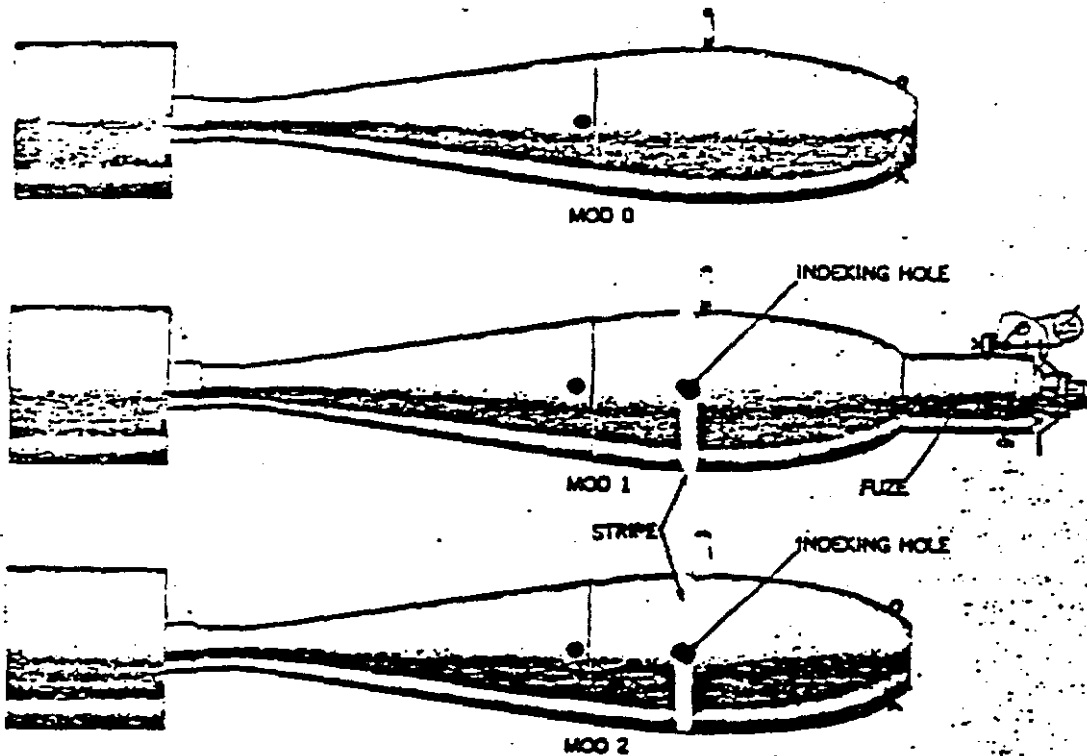


Figure 11-10.—25-lb Practice Bomb Mk 76 Mods.

Mark.....	76.....	76.....	76.....
Mod.....	0.....	1.....	2.....
General Arrangement.....	561638.....	1381205.....	1381208.....
List of Drawings.....	Sk 165603.....	165802.....	165803.....
Length of Complete Bomb (with fuze) (in.).....	22.5.....	27.155.....	22.5.....
Weight of Complete Bomb (lb).....	23.8.....	25.10.....	23.70.....
Signal.....	Mk 4 Mods 0, 1, 2, 3.....	Mk 4 Mod 3.....	Mk 4 Mod 3.....
Fuze.....	Not Used.....	AN-M146E3.....	Not Used.....
Firing Pin.....	Mk 1 Mod 0.....	Not Used.....	Mk 1 Mod 0.....

General Description

The 25-lb PB Mk 76 Mod 0, now obsolescent, has a tear-drop shaped, cast-metal body which is centrally bored. The tail-tube assembly fits into the end of the bore. The conical afterbody covers the tail-tube assembly and is threaded to the body. The two sections are staked together to prevent un-

screwing. The fin assembly is welded to the tail tube. Firing-Pin Assembly Mk 1 Mod 0 and the signal are assembled into the bore of the body and secured in place by a safety cotter pin.

In the Mod 0 a single lug is positioned just forward of the center of gravity of the bomb. Some bombs of early manufacture

EXHIBIT D

SANTA MARGARITA COMPANY

The purpose of this letter is to provide information concerning an abandoned practice range near the south end of Rancho Santa Margarita.

From 1944 through 1956, the United States Marine Corps used the most southerly portions of the Plano Trabuco as an aircraft practice range. We have been informed by the Marines that no live ordnance was ever used. The Marine aircraft fired practice rockets with inert heads and dropped "target markers".

Attached is a "Target Marker Fact Sheet" which contains important information. Please review the fact sheet carefully. Note that the target markers (but not the practice rockets) contained a small charge designed to create a puff of smoke upon impact. It is likely that a small number of the target markers failed to ignite on impact. While it is not likely that you would encounter a target marker and even less likely that the target marker would contain an unignited charge, we urge you to exercise caution if you discover any such devices (see the attached sketch). In particular, please be sure that all of your family members understand the enclosed fact sheet.

Should you come across a target marker, please follow this procedure. During business hours, Monday through Friday from 7:00 a.m. to 5:00 p.m., call Norm Burch, Santa Margarita Company construction manager, (714) 858-9206. After hours or on weekends, please call Santa Margarita Company security, (714) 743-1580.

Target Markers Fact Sheet

Description: Four types of practice devices used by the Marine Corps for aircraft target practice have been identified.

One was a hollow-core device approximately 8-inches long that contained a small, smokeless charge. When ignited, it expelled a powdery substance and created a puff of smoke that the pilot could see to test the accuracy of his aim. We refer to these devices as "target markers."

The other three types were practice rockets, 2.25, 3.5 and 5 inches in diameter. All were completely inert.

Background:
1944-56 From 1944 until about 1956 the USMC used the southerly 503 acres of the Plano Trabuco for a practice area. In the context of the 5,000-acre Rancho Santa Margarita community, the 500-acre site is in the extreme southern portion, approximately five miles from the current Phase I residential area.

1950-84 In the past 40 years of ranching and farming operations, hundreds of target markers were found and stockpiled by Rancho Mission Viejo employees without incident.

In 1984, Santa Margarita Co. requested that the USMC remove target markers from the practice site and remove those which had been collected and stored over time by Santa Margarita Company employees involved in farming the land. The USMC conducted extensive electronic sweeps of the practice area with metal detectors.

In all, approximately 6,000 lbs. of target markers were removed and examined by the USMC. While the great majority were found to be completely inert, a small percentage were found to contain remnants of signal devices. It was not determined whether these devices could be ignited.

1985 During early grading of the northern (Phase I) area of Rancho Santa Margarita, three to four feet of topsoil was removed, raked and replaced. No target markers were ever found.

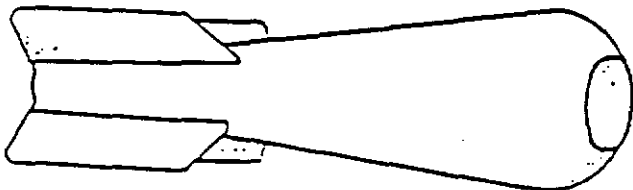
Status: The number of undiscovered target markers cannot be verified, however, because many of them buried on impact or have been buried over time. However, of the thousands that had been removed, only a very small percentage were found to contain signal device residue. Further, it is believed that the firing mechanisms of any target markers have likely been rusted solid after 40 years of rain and burial in wet ground.

Hazard: In the unlikely event that someone were to find an unignited target marker with the firing mechanism intact, and hit it with enough force for it to ignite, it could result in injury.

Procedure: Since 1984 when the first markers were discovered, it has been Santa Margarita Company policy that any recovered target markers are to be collected and returned to the USMC for proper disposal in conformance with standard Marine Corps practice. Construction crews working on road building and excavation programs have been notified of this procedure.

Current as of 6/22/87

TARGET MARKER



PRACTICE ROCKET

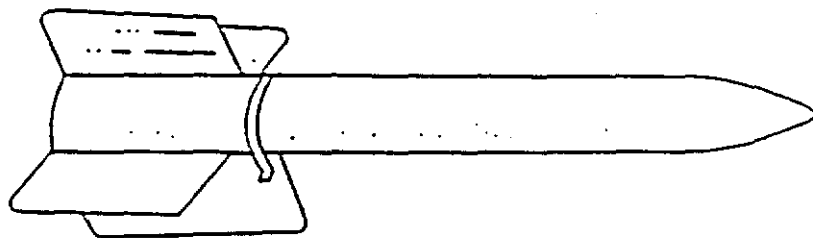


EXHIBIT I

NOTICE TO ALL VILLA LA PAZ RESIDENTS

Dear Resident:

You may have read a recent edition of the Rancho Santa Margarita News, which erroneously reported that an abandoned mortar range exists at the southern end of the Plano Trabuco. The purpose of this letter is to provide all Rancho Santa Margarita residents with accurate facts concerning this matter.

From 1944 through 1956, the United States Marine Corps used the most southerly portions of the Plano Trabuco as an aircraft practice range. We have been informed by the Marines that no live ordnance was ever used. The Marine aircraft fired practice rockets with inert heads and dropped "target markers."

No practice rockets or target markers were found during the extensive grading of the Rancho Santa Margarita residential areas. The practice range was approximately five miles south of the existing residential areas.

Attached is a "Target Marker Fact Sheet" which contains important information. Please review the fact sheet carefully. Note that the target markers (but not the practice rockets) contained a small charge designed to create a puff of smoke upon impact. It is likely that a small number of the target markers failed to ignite on impact. While it is not likely that you would encounter a target marker and even less likely that the target marker would contain an unignited charge, we urge you to exercise caution if you discover any such devices (see the attached sketch). In particular, please be sure that all of your family members understand the enclosed fact sheet.

Should you come across a target marker, please follow this procedure. During business hours, Monday through Friday from 7:00 a.m. to 5:00 p.m., call Norm Burch, Santa Margarita Company construction manager, (714) 858-9206. After hours or on weekends, please call Bob Clark, Santa Margarita Company security, (714) 743-1580.

Very truly yours,

Elaine Carter

Elaine Carter
Associate Director
Community Relations

EC/vak
attachment
June 1987

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX F

LETTERS/MEMORANDUMS/CORRESPONDENCE

APPENDIX F

LETTERS/MEMORANDUMS/CORRESPONDENCE

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(Ref 29)
- F-3 Routing Slip/Letter - "...1800 acres...", 3 Jul 44.
(Ref 29)
- F-4 Routing Slip/Letter - "...1800 acres...", 29 Jan 46.
(Ref 29)
- F-5 Letter - lease renewal (1818 acres), 1947/48. (Ref 29)
- F-6 Letter - "modification of lease...to 503 acres",
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- F-8 Letter - "...decontamination...& modification of lease"
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- F-9 Letter - "decon & modification of lease...",
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- F-10 Routing Slip - "decon of area & modification of
lease...", 7 Dec 49. (Ref 29)
- F-11 Correspondence between COE, Huntsville & CG, El Toro
MCAS, 1989.
- F-12 Correspondence between Rancho Mission Viejo & El Toro
MCAS, 1984.
- F-13 Request for EOD Support, 1988.

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Pacific Southwest Region

Da

ROUTING SLIP—ELEVENTH NAVAL DISTRICT COMMANDANT'S OFFICE

Date Received 3 Oct. 45 Our File No. KV(ELTORO)
 Received From BuAer
 Their File No. Aer-MA-3-MIG L11-15 Dated 29 Sept 45

Subject: MCAS El Toro - Temecula Targets, Discontinuance of.
 (End-1 on ComNAB 11ND ltr L11-1 TCA:mc, Ser. 308-95, to
 BuAer dtd 18 Sept 45 with encls. thereto.)
 End-1 only

TO	Init.	TO	Init.	TO	Init.
Commandant		Disbursing		Public Works	<input checked="" type="checkbox"/>
Asst. Comdt.		Domestic Trans.		Security	
Chief of Staff		Intelligence		Supply, Dist.	
Asst. Chief of Staff	<input checked="" type="checkbox"/>	Issuing			
Aide to Comdt.		Legal			
Chief Clerk		Material, Dir. of			
		Medical			
Accounting		Operations			
Adv. Base Officer		Planning, Logistics	<input checked="" type="checkbox"/>		
A. CofS for Pers.		Port Dir. (NTS)		ComSoCalSec	
Civilian Pers., Dir.		Postal		ComAir,SoCalSec	
Communications		Public Information		Comdr. LDF	

Blue Check is for Information.

Red Check is for Action.

Return this slip to Commandant's Office within TEN DAYS after "Date Received" (provided action date is not specified), or request extension by Commandant's Office (Extension 207).

If checked here return correspondence to Commandant's Office; otherwise it may be retained.

CHECK APPROPRIATE SPACES BELOW BEFORE RETURNING TO COMMANDANT'S OFFICE

Returned	Retained	No Action Required	Action Taken Below
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
(a) Reply prepared for Commandant's Signature			
(b) Reply made "By direction." Copy attached			
(c) Other action taken as follows:			

11ND-822-9-24-45-6M.

pel

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Pacific Southwest Region

R1

ROUTING SLIP—ELEVENTH NAVAL DISTRICT COMMANDANT'S OFFICE

Date Received 2 Mar 46 Our File No. KV(El Toro)
 Received From Comdr. NAB 11 ND
 Their File No. NAB11/ElToro/E41-10 Dated 1 Mar 46
 WBJ:bw Serial 183-80
 Subject: Bombing Target No. 107, Vail Co, Permittor
- End-2 on CG, MCAS, El Toro ltr KV40/N1-13
/N20-10 Serial 71-80 GWB:dd dtd 18 Feb 46

TO	Init.	TO	Init.	TO	Init.
Commandant		Domestic Trans.		Public Information	
Chief of Staff		Intelligence		Public Works	<u>30</u>
Aide to Comdt.	<u>W</u>	Issuing		Security	
Aide to ComNOB, SD		Legal		Supply, Dist.	
Chief Clerk		Material, Dir. of			
		Medical			
Accounting		Operations			
A. CofS for Pers.		Planning Logistics	<u>W</u>	ComSoCalSec	
Civilian Pers., Dir.		Port Dir. (NTS)		ComAir,SoCalSec	
Communications		Postal		Comdr. LDF	

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If checked here return correspondence to Commandant's Office; otherwise it may be retained.

CHECK APPROPRIATE SPACES BELOW BEFORE RETURNING TO COMMANDANT'S OFFICE			
Returned	Retained	No Action Required	Action Taken Below
		<input checked="" type="checkbox"/>	

- (a) Reply prepared for Commandant's Signature
- (b) Reply made "By direction." Copy attached
- (c) Other action taken as follows:

11ND-109-1-21-46-4M.

Retained

P1:He

ND11/KV40
(Serial P-22262)

7-MAR 1946

AIR MAIL

To: BuDocks
Attn: F-5-5

Subj: Cancellation of Permit dated 1 Dec 1944 from Vail
Company to the United States of America for Bombing
Target Site located in SW 1/4 Sec 36, T 7 S, R 2 W,
SBB&M., County of Riverside, California (Bombing
Target #107)

Ref: (a) Com11 ltr ND11/NAC11/F41-10 (Serial P-21844)
to BuDocks dtd 25 Jan 1946

1. By Ref (a) Com11 requested cancellation of subject
permit. ComdrWAB, 11ND advised 1 March 1946 that resto-
ration required under subject permit has been completed.
The foregoing is forwarded for BuDocks information.

BY direction of the Commandant:

CC: ComdrWAB, 11ND

R. FOWLER
Executive Assistant
Public Works Officer,
Eleventh Naval District

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Pacific Southwest Region

ROUTING SLIP — ELEVENTH NAVAL DISTRICT COMMANDANT'S OFFICE

EL-13 F41-6

Date Received 5 July 1944 Our File No. KV(El Toro)

Received From NCAS, El Toro, Calif.

Their File No. KV40/11-3 WJF;njc 101753 Dated 3 July 44

Subject: Requisition for renewal of leasehold estate in 1800
acres of land, more or less, El Toro Bombing Target
Site, transmittal of.

TO	Init.	TO	Init.	TO	Init.
Commandant		Disbursing		Port Dir. (NTS)	
Asst. Comdt.		Dist. Patrol Off.		Postal; MPE	
Chief of Staff		Dist. Supply		Public Relations	
Asst. Chief of Staff	<i>mas</i>	Domestic Trans.		Public Works	
Aide to Comdt.		Intelligence		Security Off.	
Accounting		Issuing		Welfare & Rec'n	
Army Liaison		Legal			
Chaplain; NRS		Medical Off.		Ind. Mgr.	
Chief Clerk		Operations			
Civilian Personnel		Ord. & Eng. Off.		ComSouCalSec	
Communications		Personnel (Navy)		ComAir,SouCalSec	
Dir. of Training		Planning; Logistics	<i>WJF</i>	Comdr. LDF	

Blue Check is for Information. Red Check is for Action.
Send Copy to

Return this slip to Commandant's Office within TEN DAYS after "Date Received" provided action date is not specified.

If checked here return correspondence to Commandant's Office; otherwise it may be retained.

CHECK APPROPRIATE SPACES BELOW BEFORE RETURNING TO COMMANDANT'S OFFICE

Returned	Retained	No Action Required	Action Taken Below
		<input checked="" type="checkbox"/>	
(a) Reply prepared for Commandant's Signature			
(b) Reply made "By direction." Copy attached			
(c) Other action taken as follows:			

11ND-13-5-24-44-6M.

And Refer to:
KV40/F41-10
(Serial No. P-14937)

Mu:Bas

8 - JUL 1944

AIR MAIL

To: BuDocks.
Attn: F-5-1.

Subj: Requisition covering renewal of leasehold estate in U.S. vs. 1800 acres of land situated in the County of Orange, State of California, et al., 3467 B Civil.

Ref: (a) SecNav ALSTACON 211400 dated 21 Dec. 1943.
(b) Ur ltr ND11/N1-13 5-ND-11 F-5-1/RCW/md, dated 26 May 1944.

1. Encl. 1, requisition covering rental on the subject property for the fiscal year 1945, is forwarded herewith as required by ref. (a).

2. This condemnation was not listed on ref. (b).

3. It has been determined the subject property is required for the fiscal year 1945 as a Bombing Target Site in connection with the operation of the Marine Corps Air Station, El Toro, California.

4. It is requested the Bureau take necessary action to process this requisition to BuAer for approval.

By direction of the ~~Commandant~~

H. L. HILTON
Executive Assistant Public Works Officer.

Encl.
1. (HW) Requisition.

Copy for Commandant's Office

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Pacific Southwest Region

R1

ROUTING SLIP—ELEVENTH NAVAL DISTRICT COMMANDANT'S OFFICE

Date Received 30 Jan 46 Our File No. KV(El Toro)
 Received From Comdr. NAB 11 ND
 Their File No. NAB11/N1-13 TCB:an Dated 29 Jan 46
Serial 15-80
 Subject: MCAS, El Toro - Acquisition of 1800 Acres
of Land, more or Less, in Orange County,
California - Request for - End-2 on CG MCAS,
El Toro 1st KV40/L4-3 JAL:amm:mlw Serial
2625-14 dtd 18 Dec 45

TO	Init.	TO	Init.	TO	Init.
Commandant		Domestic Trans.		Public Information	
Chief of Staff		Intelligence		Public Works	
Aide to Comdt.		Issuing		Security	
Aide to ComNOB, SD		Legal		Supply, Dist.	
Chief Clerk		Material, Dir. of			
		Medical			
Accounting		Operations			
A. CofS for Pers.		Planning, Logistics		ComSoCalSec	
Civilian Pers., Dir.		Port Dir. (NDS)		ComAir, SoCalSec	
Communications		Postal		Comdr. LDF	

Blue Check is for Information.

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If checked here return correspondence to Commandant's Office; otherwise it may be retained.

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Returned	Retained	No Action Required	Action Taken Below
(a) Reply prepared for Commandant's Signature			
(b) Reply made "By direction." Copy attached			
(c) Other action taken as follows:			

11ND-109-1-21-46-4M.

P-11-0
concur with
com NAB -
see approval

concur with ComNAVBS for
non-approval until such time
as per's war plans and
AS Hobbs-based facilities
to support the spec-
ifying forces
become free
things (R)

KV (El Toro)

ND11/KV40
(Serial No. P-21924)

Pl:Sh
End-3 on CG, MCAS, El Toro, Calif.
ltr KV40/L4-3 JAL:amm:mlw
Ser 2625-14 dtd 18 Dec. 1945.

4 - FEB 1946

To: Chief of the Bureau of Aeronautics

Subj: Marine Corps Air Station, El Toro - Acquisition of
1800 Acres of Land, more or less, in Orange County,
California - Request for.

1. ComEleven presently concurs with the recommendations of
Comdr., Naval Air Bases, San Diego, California as set forth
in end-2 regarding the acquisition of 1800 acres, more or
less, in Orange County, California, presently under lease
and recommends no action be taken regarding purchasing said
lands until such time as post war plans for shore based
facilities to support the operating forces become more firm.

L. B. OLDHAM
Commandant, El Toro

cc: ComMarAir West Coast
CG, MCAS, El Toro
BuDocks (F-5)

2/5/46 JAL

COPY

U.S. MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

KV40/NAB;eif
Serial No. 1168-14

16 Jul 1947

From: Commanding Officer, Marine Corps Air Station, El Toro
(Santa Ana), California.

To: Commandant, Eleventh Naval District.

Subj: Land pertaining to rocket range.

Refs: (a) BuDocks spdltr ND11/N1-13, L5-Z-ET, F-5-1 SJ/wrw to
Comll of 23 Jun47.

(b) Comll ltr Ser 27415/44K, dtd 7 Jul 47.

1. All Marine tactical aircraft on the west coast are based at this station. Training is continuous. It is therefore recommended that the lease for 1818 acres of land from the Rancho Mission Viejo, now employed as a rocket training range, be renewed as of 1 Jan 48.

2. Civilians in the immediate area of the rocket range have taken definite action to prevent renewal of the lease after December 31, 1947. A petition was circulated on the grounds that bombing and rocket training presented a serious fire hazard, thereby endangering the water sheds. The petition was forwarded to Congressman Phillips in Washington. Result of this action was that the Bureau of Aeronautics sent a representative to this station to investigate the complaint. The representatives report to the Bureau of Aeronautics stated that the petition was not founded on fact, and recommended that the range be opened immediately for further training.

3. This command is in the process of contacting large land holders in the area as well as Mr. Peterson, the representative of the Rancho Mission Viejo Land Co., with the hope of renewing the lease. Indications are that these people may look with favor on the renewal.

4. It is planned if the lease can be renewed, to retain this range for rocket training only. A range more distant from the station than this would present very real operational problems. Areas in Camp Pendleton that would be satisfactory for rocket firing are already employed by the First Marine Division and cannot be made available to aviation.

S. E. RIDDERHOF

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ADDRESS REPLY TO
COMMANDANT
11TH NAVAL DISTRICT
AND REFER TO:

KV40
ND11-DCM/SH
Serial 27415/44K

COMMANDANT'S OFFICE
ELEVENTH NAVAL DISTRICT
SAN DIEGO 30, CALIFORNIA

7-11-9/KV
W
J
2 - JUL 1947

From: Commandant, Eleventh Naval District.
To: Commanding Officer, Marine Corps Air Station,
El Toro, California.

Subject: Tenure of Lease NOy(R)-37241, Plano Trabuco
Bombing Target, Orange County, California.

Enclosure: (A) Copy of BuDocks auditr ND11/MI-13,
25-7-47, S-5-1 J/wrw to Comdl of
23 June 1947.

1. By enclosure (A) the Bureau of Yards and
Docks has requested information relative to the contemplated
period of usage of the subject property. This information
is required in view of a concerted effort on the part of
property owners and residents in the vicinity to effect
termination of the lease on 31 December 1947. Comments and
recommendations of the Commanding Officer, U. S. Marine
Corps Air Station, El Toro, are requested relative to this
matter.

A. K. FOGG,
By Direction.

Copy to:
ComdrNABS
DistPlanning ✓

KV (El Toro)

KV40
ND11-JWM/2F
Serial 30800/44E

28 APR 1948

From: Commandant, Eleventh Naval District.
To: Commanding Officer, Marine Corps Air Station, El Toro, California.
Via: Commander, Naval Air Bases, Eleventh Naval District.
Subject: Modification of Lease NOy(R)-37241 with Citizens National Trust and Savings Bank of Los Angeles to provide reduction of area to 503 acres.
Reference: (a) CO, MCAS, El Toro, ltr Serial 5-80 to COMNAE LIND dtd 16 Jan 1948.
Enclosure: (A) Copy of Lessor's ltr of 13 Feb 1948 to Coml.

1. By reference (a) the Commanding Officer requested execution of a modification agreement to subject lease providing for release of a portion of the leased property to the lessor and retention of 503 acres designated as Parcels A, C and D on enclosure (A) to reference (a) with a proportionate reduction in rental. By enclosure (A) the lessor has indicated willingness to effect this reduction in leased area with the rental prorated on the basis of that established in the basic lease and has suggested that the form of modification agreement will be acceptable at such time as restoration of the portion of the original acreage to be released is accomplished.

2. It is requested that necessary action be taken to comply with the restoration requirements of the lessor as stated in enclosure (A) and that upon completion of this work the Commandant be notified in order that the proposed modification may be submitted to the lessor for acceptance with a minimum of delay.

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Pacific Southwest Region

11ND Headquarters-18 (Rev. 10-47)

COMELIVEN ROUTING SLIP

FROM Comdr AB11ND	DATE RECEIVED 18 May 48	THEIR FILE NO. NAW11/L4-3 VSB:mjh Serial 60-99	DATED 18 May 48	OUR FILE NO. N1-13 KV(El Toro)
-----------------------------	----------------------------	--	--------------------	--------------------------------------

SUBJECT
Restoration of target area in the Rancho Mission Viejo, to enable lease NOy(R)-37241 to be reduced to 503 acres - End-1 on MCAS, El Toro ltr KV40/N20-10 /JWS:mp Serial 71-21 dtd 10 May 48

No. Copies Rec'd:

TO	Init	Date Fwd	TO	Init	Date Fwd	TO	Init	Date Fwd	TO	Init	Date Fwd	TO	Init	Date Fwd
00 COMDT.			01 A C/S PERS.			02 A C/S ADMIN			03 A C/S OPER.			04 A C/S LOG.		
09 Ch. of Staff			11 Naval Pers.			21 Admin.			31 Oper.			41 Material		
05 Staff Sec.			12 Civ. Pers.			22 Legal			32 Intelligence			42 I & S		
05A Chief Clerk			13 Training			23 Public Info.			38 Security			43 Supply & Fis.		
06 Comdt. Aide			15 Welfare			25 Records Mgmt.			34 Comm.			44 Public Works		
07 Dist. Plan. & W.P.			16 Discipline			26 Pub. & Ptg.			35 Aerology			45 Ordnance		
08 Gen. Inspector			18 Chaplain						36 MarCorps			46 Medical		
010 Dir. Nav. Res.									37 Aviation			47 Dental		
Pt. Director														

BLUE Check is for Information

RED Check is for Action

CHECK APPROPRIATE SPACES BELOW BEFORE RETURNING TO COMMANDANT'S OFFICE

Returned	Retained 416 Cantacase	No. Action Required	Action Taken Below
(a) Reply prepared for Commandant's Signature			
(b) Reply made "By direction." Copy attached			To Comdant - Advising results of two trips of B.E. office
(c) Other action taken as follows:			1258/45

Handwritten notes:
 Lt (jg) [unclear] [unclear]
 MCA 5, El Toro
 27 May 48
 20 June 48
 To MCA 5, El Toro

Return this slip to Commandant's Office within TEN DAYS after "Date Received" as shown at top of this slip or request extension by "Request for Extension" form.
 DPPO-San Diego-3600-4-26-48-9M.

El Toro

116
ND11-45/mo
Serial: 1258/45

7 June 1948

From: Commandant, Eleventh Naval District.
To: Commander, Naval Air Bases, Eleventh
and Twelfth Naval Districts.

Subject: Services of Bomb Disposal Officer Incident
to Restoration of Target Area in the Rancho
Mission Viejo (Marine Corps Air Station,
El Toro).

Reference: (a) CO, MCAS, El Toro, Ltr., LV40/NSO-10:
JMS-mo, Ser. No. 71-21 dated 10 May 1948.
(b) COMNAS, 11 & 12 NSA-1st-End., L4-3,
VSB:aln, Ser. No. 60-90 dated 18 May
1948.

1. Pursuant to requests for services in references
(a) and (b), the District Bomb Disposal Officer proceeded to
Marine Corps Air Station, El Toro, on two (2) separate days.
The last trip was made on 2 June 1948.

2. Investigation by the Bomb Disposal Officer re-
vealed the following condition:

- (a) The First Marine Air Wing were continuing use of
the target area.
- (b) Tentative date of discontinuance of the target
area has not been determined.
- (c) Commanding Officer, Marine Corps Air Station,
El Toro, will advise if and when services of
Bomb Disposal Officer are later required.

3. Final restoration of the area will require a
preliminary survey and marking of the target area by Marine
Corps Air Station, El Toro, personnel prior to arrival of the
Bomb Disposal Officer. This officer has no assistants and
must, therefore, be aided by the station personnel when subse-
quently cleaning up the target area.

THEODORE W. RIMER
By direction

Copy to:
CO, MCAS, El Toro.

By Direction Copy for Commandant's Office

KV40
ND11-KEV/Sa
Serial 32527/44X

From: Commandant, Eleventh Naval District.
To: Commander, Naval Air Bases, Eleventh Naval District, Naval Air Station, San Diego, California.

Subject: Lease NQy(R)-37241 - Plano Trabuco Bombing Target, MCAS, El Toro, Calif. - Decontamination of Area and modification of lease.

Reference: (a) Comdr NAB 11ND Ind-1 on CG, MCAS, El Toro ltr KV40/N20-10 JWS-mp Serial No. 80-21 to Com1 of 9 June 1948.

Enclosure: (A) Copy of DPWO 11ND ltr KV40 ND11-RGM/Sa Ser 4120/PW-K to CG First MarDiv of 21 Feb 1949 and Ind-1 thereon.

1. Reference (a) advised the Commandant that the excess portion of Plano Trabuco target area had been cleared of all surface scrap, and requested that arrangements be made for decontamination by screening the area with a mine detector.

2. The decontamination of this area is a prerequisite to the modification of subject lease and a resultant saving to the Government in rental charges of \$3,240 per annum.

3. As indicated by enclosure (A), the District Public Works Officer has attempted, without success, to locate suitable mine detection equipment and qualified operating personnel to definitely determine whether the 1300 acres of excess target area is clear of buried hazardous material.

4. In the absence of any other plan for the solution of this problem, it is recommended that this matter be submitted to the Bureau of Aeronautics for decision as to procedure for decontamination of this former target area.

W. D. BAKER

Copy for Commandant's Office

ND11-RGM/Sa
KV40
Serial: 39186/44

1 AUG 1949

SECOND ENDORSEMENT on GrdDisOffr LEND ltr of 27 Sep 1949

From: Commandant, Eleventh Naval District
To: Chief, Bureau of Yards and Docks
Via: (1) Chief, Bureau of Ordnance
(2) Chief, Bureau of Aeronautics

Subj: Decontamination of area and modification of Lease
MOy(R)-37241, Plano Trabuco Bombing Target, Marine
Corps Air Station, El Toro, California

Ref: (a) COMNAV 11412 ND ltr WASH/El Toro/44-3/28 RMD:Su
Serial 249-80 of 22 Apr 1949 to BuAer
(d) DPWG LIND End-1 (on ref (a)) KV40 ND11-KSV/Sa
ser 5271/SE-210 of 26 Apr 1949 to BuAer
(e) BuAer End-2 (on ref (a)) Aer-SE-11 MOy(R)-32741
ser 39398 of 23 May 1949 to BuDocks (S-412)
(f) BuOrd End-3 (on ref (c)) (MaJa-2) RMD:mia to
Comll of 14 Jun 1949
(g) Comll ltr KV40 ND11-RGM/Sa Serial 32910/44 of
27 Jul 1949 to BuOrd
(h) BuOrd ltr ND11 (MaJa-2) RMD:mia to Comll of
22 Aug 1949

1. Readdressed, and forwarded.
2. In the fall of 1947, the lessor under subject lease re-
quested that 1,297 acres, of the 1,500 acres covered by the
lease, be returned to the lessor for agricultural purposes.
An investigation reveals that the return of said land to the
lessor was orally approved by the Marine Corps Air Station,
El Toro, and the lessor was given oral permission to prepare
the 1,297 acres for planting in anticipation of early modifi-
cation of the lease, to eliminate said acreage therefrom and
reduce the leased area to 503 acres of land. No permission
was granted to plant the acreage.
3. A comprehensive effort was made by this office to obtain
services of a decontamination team and qualified officer to
clear the bombing target area to be released. By reference
(c) the Commander, Naval Air Bases, Eleventh and Twelfth
Naval Districts, reiterated that the area in question should
be decontaminated. The District Public Works Officer, by
reference (d), requested that the Bureau of Aeronautics advise
as to the method to be employed in clearing the area. The
Bureau of Aeronautics requested by reference (e) that the

Copy for Commandant's Office

KV (C. Jones)

ND11-RAM/Ss
KV40
Serial: 35186/44

14 OCT 1949

Bureau of Ordnance consider a method to accomplish the decontamination. In reference (f), the Bureau of Ordnance advised the Commandant to obtain the services of the Ordnance Disposal Officer in the Twelfth Naval District. Subsequent to receipt of reference (f), the lessor informed the Commandant that all liability and restoration of the subject area to be released would be accepted by the lessor. The Bureau of Ordnance was so informed of this decision by the lessor in reference (g). In reply to reference (g), the Bureau of Ordnance advised by reference (h) that the extent of decontamination, if any, should be based on the inspection of the property by a qualified Ordnance Officer. The Commandant, Twelfth Naval District, ordered an Ordnance Officer to the Marine Corps Air Station, El Toro, on 20 September 1949 and, as a result of the investigation, the basic letter has been received and is forwarded.

4. As stated heretofore, the lessor was given oral permission to prepare the land for crops in anticipation of the subject lease being modified. Without further authority, the lessor entered into a lease with a third party for a term beginning in October, 1947 and ending in October, 1948, and in October, 1948, another lease was consummated for a period ending in November, 1949. As a result of these leases, the lessor has obtained rental for the land from third parties and has also collected rental from the Government for the area.

5. The Commandant recommends that, if the report of the Ordnance Disposal Officer contained in the basic letter is satisfactory, the lease be modified effective the date land preparation commenced; the modification to return to the lessor, without liability to the Government, 1,297 acres of the original 1,800-acre parcel; the lessor then to refund, at the rate of \$3,240 per annum, the rental that has been overpaid by the Government. If this procedure is approved, necessary action will be taken to submit a modification agreement to the lessor and to collect the overpayment of rental. Commander, Naval Air Base, Eleventh and Twelfth Naval Districts, concurs in recommendations.

J. T. ACUFF,
Chief of Staff.

Advance Copy to:
Duxer, with encl
Haddock, with encl

Copy to:
4
COMNAV 11 & 12 ^{with encl}
CC, MCAS, El Toro, Calif. ^{with encl}
DisOrdOffr, 12th ND San Fran. 2, Calif. ^{with encl}
BPPQSD-3440-4-16-48-10M.

F-9

Reproduced from the holdings of the National Archives
Pacific Southwest Region

ROUTING SLIP
11ND Gen. 35 (Rev. 12-48)

OUR FILE NO. KV(El Toro)	FROM BuAer (To BuDocks)	DATED. 7 Dec 49
SENDERS FILE NO. Aer-SE-11 NOy (R)-37241 Ser 216488	SUBJECT MCAS, El Toro, Calif.; decontamination of area and modification of lease NOy(R)-37241, Plano Trabuco Bombing Target. (End-4 on OrdDisOf 12ND ltr of 27 Sep 49 to BuOrd) cc End-4 only	DATE REC'D 12 Dec 49
		NO. OF C.C. 1cc

Code		Init.	Date	Code		Init.	Date	Code		Init.	Date
Action	Info.			Action	Info.			Action	Info.		
	2-2	AD	12/12		44	CG	12/14				
	04	CG	12/14		10	P	12/14				
	75	AD	12/15								

Retained By Code: 44 Date Returned: 12/21/49 No Action Required:

Reply Prepared For C.O. Signature: Check Serial No.: _____ Dated: _____

Reply Signed "By Direction" Code: _____ Serial No.: _____ Dated: _____

Other Reply: _____ Dated: _____

Return This Slip To Code 44 Within 10 Days After "Date Rec'd" Shown Above, Or Request Extension

REMARKS

DUE DATE 1/12/50

RECEIVED

OCT 20 1989


STRATA

CEHND-ED-PM (6280.7 AQ2/487V/8 Sep 89) (200-1a) 1st End
Mr. Nore/cmw/AV 788-5800
SUBJECT: Initiation of DERP-FUDS Assessment at Temecula Bombing
Range

DA, Huntsville Division, Corps of Engineers, PO Box 1600,
Huntsville, AL 35807-4301 16 OCT 1989

FOR Commanding General, U.S. Marine Corps, Marine Corps Air
Station, El Toro (Santa Ana), California 92709-5001

1. In response to your request that we initiate a preliminary assessment at the subject site, we have tasked Los Angeles District (CESPL) to conduct the assessment and to assign the site a high priority for FY90. Los Angeles District is already arranging for a site survey. The DERP-FUDS project number for this site is J09CA020900.
2. Thank you for bringing this site to our attention. If you know of any similar sites, please let us know. Your point of contact at CESPL is Mr. Lee Jauman at (213) 894-2865.


CHARLES T. MYERS III
COL, EN
Commanding

CF:

Commander, U.S. Army Engineer District, Los Angeles, ATTN:
CESPL-ED-PM, P.O. Box 2711, Los Angeles, CA 90053-2325



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
EL TORO (SANTA ANA), CALIFORNIA 92709-3001

IN REPLY REFER TO

6280.7
AQ2/487V

8 SEP 1989

From: Commanding General, Marine Corps Air Station El Toro
To: Division Engineer, United States Army Corps of Engineers,
Huntsville Division, Attn: CEHND-ED-PM (DERP-FUS), P.O. Box
1600, Huntsville, AL 35807-4301

Subj: INITIATION OF DERP-FUS ASSESSMENT AT TEMECULA BOMBING RANGE

Encl: (1) Site Map
(2) Photocopies of Pictures of Ordnance
(3) JEODU Incident Report #193-88
(4) Newspaper Articles Referencing Bombing Range
(5) DERP-FUS Information Form

1. It has come to my attention that unexploded practice ordnance may still exist at a nearby formerly used defense site, the Temecula Bombing Range. Some of these devices are of the "target marker" type and may have sufficient explosive potential to cause injury if mishandled.

2. Temecula Bombing Range was used in the 1940's and perhaps the early 1950's as a practice bombing range for the pilots stationed at Marine Corps Air Station (MCAS) El Toro. The land used for target practice was leased by the government and is located approximately 10 miles east of the base near Mission Viejo, California. We do not possess any lease documents or other information which would describe the precise area included in the range or the government's original responsibilities in relation to the range, but enclosure (1) shows the approximate general area where unexploded devices have been unearthed over the years. Please note that the target area may not be accurately depicted in enclosure (1); Mr. Lee Jauman of your Los Angeles office is presently searching for lease documentation or maps of the range.

3. The Santa Margarita Company began construction of a housing development to the north of the former bombing range in 1984. The developer and/or new residents encountered ordnance at the site, and the Orange County Hazardous Device Squad (OCHDS) began making daily responses to the development to pick up 3 pound practice bombs, 2.25 inch rocket motors, 5 inch HVAR's and MK 76's. Upon ascertaining that the ordnance originated at MCAS El Toro, the OCHDS contacted the base's Joint Explosive Ordnance Disposal Unit (JEODU).

4. The JEODU and the OCHDS jointly commenced a surface sweep clearance operation on 16 June 1984. The sweep was completed on 30 June 1984. Fourteen dump truck loads of certified empty ordnance were transported from the site. 448 ordnance items suspected of containing spotting charges were destroyed.

Subj: INITIATION OF DERP-FUS ASSESSMENT AT TEMECULA BOMBING RANGE

5. On 30 August 1984, Mr. Thomas C. Blum, the Executive Vice President of Rancho Mission Viejo, a company affiliated with the developer, wrote a letter to MCAS El Toro in which Mr. Blum requested that the JEODU perform a sub-surface sweep to ensure safety at the site. We initially agreed to perform the requested duties until the JEODU conducted a Search Effectiveness Probability Study and reported that it would take nearly 7 years to sweep the area with the equipment then available; using all of the MK 26 ordnance locators on the West Coast, only a 32 percent certification rate would have been achieved. The base did agree to provide JEODU personnel to assist at the site during all heavy equipment operations, and that assistance was provided for approximately 6 weeks commencing on 3 October 1984. Thereafter, the JEODU continued to respond to all requests for assistance.

6. In May 1985, Rancho Mission Viejo's Vice President of Operations, Mr. Bob Clark, wrote to the base requesting assistance in locating any remaining target markers at the site as well as aerial photographs to help determine the exact area covered by the bombing range. We responded on 10 May, providing Mr. Clark with photographs of what we believed was the primary impact area, but again noting that we did not know the precise area included within the range. A further promise was made to continue to assist the company in clearing out the ordnance and it was pointed out that over 50,000 pounds of ordnance had already been recovered by our personnel.

7. The JEODU provided assistance whenever requested and picked up about one to five items from the site on approximately a quarterly basis for the next several years.

8. Mr. Norm Burch, ^{John Burch} who succeeded Mr. Clark, called the JEODU on 11 August 1988 and requested that trucks be dispatched to pick up ordnance at the site. Captain Lindsey, the Officer in Charge of the JEODU since August 1984, was concerned about the quantity of ordnance apparently piled at the site by construction personnel, and the command dispatched a response team to investigate the situation. Enclosures (2) and (3) are photocopies of pictures of the piles of ordnance and an incident report filed in regard to the investigation. A decision was made to notify the Commandant of the Marine Corps (CMC) about the problem and to request guidance. Mr. Dick Lind of the Rancho Santa Margarita Company called Captain Lindsey on 18 August and said that he would take care of the ordnance if the JEODU did not act to remove it within a week. The Rancho Santa Margarita Company has not contacted the base in relation to the ordnance since that time and has apparently removed a quantity of material on its own.

9. As illustrated by enclosure (4), the local newspapers did print articles in 1987 which referred to the existence of practice bombs in and around Rancho Santa Margarita. Unfortunately, the

Subj: INITIATION OF DERP-FUS ASSESSMENT AT TEMECULA BOMBING RANGE

information contained in the article was somewhat misleading in that it minimized the potential danger of the ordnance.

10. It is my understanding that the United States Army Corps of Engineers is the Department of Defense executive agent for inventorying, assessing and cleaning up formerly used sites pursuant to the Defense Environmental Restoration Program (DERP). I have also been informed that the funding for such action is provided through the DERP.

11. It is requested that your agency initiate a preliminary assessment of the Temecula Bombing Range to determine whether, and to what extent, environmental restoration is needed at the site. Enclosure (5) is provided for your reference.

13. Points of contact at this command will be Col. J. E. Sabow, Assistant Chief of Staff/G-3, telephone (714) 726-3801 or Autovon 997-3801, and Mr. Ronald G. Ress, Counsel, Marine Corps Air Bases Western Area, (714) 726-3805 or Autovon 997-3805.



D. V. SHUTER



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
EL TORO (SANTA ANA), CALIFORNIA 92709

IN REPLY REFER TO
IDA
3571

EXHIBIT B

RECEIVED

21 AUG 1984

AUG 24 1984

Rancho Mission Viejo
Attn: Mr. Gilbert Aquirre
28811 Ortega Highway
P.O. Box 9
San Juan Capistrano, California 92693

Dear Mr. Aquirre:

At the request of the Orange County Hazardous Devices Squad (OCHDS), the Marine Corps has completed the cleanup of target markers on an area once used as a practice range within the area known as Plano Trabuco (Trabuco Mesa). The cleanup was a surface sterilization. Subsurface probing methods were not employed. Metal detectors were not employed. All target markers found on the surface have been removed.

The area appears to have been a practice range upon which Marine Corps aircraft dropped practice ordnance during World War II training. The practice ordnance that we recovered consisted of three types: practice bombs 10 inches long, weighing about four pounds; 2.25-inch practice rockets; and 3.0-inch high-velocity aircraft rockets. The ordnance contained a firing assembly designed to ignite on hard impact. The assembly sets off an expelling charge of smokeless black powder, which expels the marker material, which produces a flash or puff of smoke for observation. Detailed diagrams of the types of markers used are enclosed. Since the casings were not designed to fragment or disintegrate, a number of them accumulated on the practice range. Of the 5,600 pounds of target markers recovered, our initial inspection indicated that some 448 may have contained firing assemblies and expelling or marking charges. Each of these 448 was examined and 11 per cent contained residual materials of the firing assemblies and expelling charge. Of those, 2 per cent contained residual materials of the marker load.

Due to the nature of the range, the large amount of metal that was recovered and the method used in clearing, we have concluded that additional markers probably remain in the area, that the area may be hazardous, and that it should be posted.

I would recommend, during future development of the area, that full disclosure of the practice range history be made and that all developers and buyers be apprised as to the potential dangers of handling any ordnance discovered in this area. I have attached a description of the practice ordnance that was recovered during our initial cleanup. It is our understanding that the property owner will accomplish posting of the property and other disclosure as required. The Marine Corps will respond to any call to recover suspected material that may be turned up at this site in the future; please contact the G-3 at Marine Corps Air Station, El Toro, (714)651-3801.

J. R. ROBSON
Chief of Staff

RECEIVED
SEP 4 1984
E.I. Newport Center

RANCHO MISSION VIEJO

August 30, 1984

Colonel J. R. Robson
Chief of Staff
United States Marine Corps
El Toro (Santa Ana) California 92709

Dear Colonel Robson:

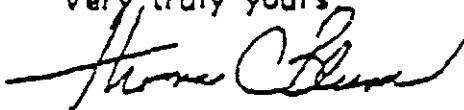
This is in response to your letter of August 21, 1984 to Gilbert Aguirre. We appreciate the efforts of the Marine Corps to remove and examine the target markers on the southern end of Plano Trabuco.

As you know, the target markers have lain in place for about 40 years. During that time, a substantial portion of the target area has been farmed, and the vast majority of the target markers which the Marine Corps recently removed were collected during agricultural operations and placed in one location. That long history of agricultural operation in the target area, together with the recent Marine Corps cleanup of the area, causes us to believe that any hazard from surface target markers is minimal. Nevertheless, out of an excess of caution, we would like to have the primary target areas swept with metal detectors in order to locate and remove any buried target markers. We propose that you supply the personnel and metal detectors to sweep the areas where higher concentrations of target markers have previously been found. We will supply the personnel and equipment to excavate the locations marked by your personnel. Any target markers unearthed would then be disposed of by your personnel.

We also propose that your personnel examine any target markers so removed and advise us whether such target markers contain any residual material of the firing assemblies, expelling charges or marker loads.

If the foregoing proposal is acceptable to you, we would like to commence the additional cleanup operation as soon as possible. Could you please reply at your earliest convenience?

Very truly yours



Thomas C. Blum
Executive Vice President

TCB:sc

cc: Colonel Clarence Baker

bc: BRUCE TESTER



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
EL TORO (SANTA ANA), CALIFORNIA 92709

13 Sep 1984

IN REPLY REFER TO
5800
AA
13 SEP 1984

Mr. Thomas C. Blum
Rancho Mission Viejo
28811 Ortega Highway
P.O. Box 9
San Juan Capistrano, California 92693

Dear Mr. Blum:

Your request of 30 August 1984 for assistance in attempting to locate and remove any buried ordnance on the abandoned military practice range on Plano Trabuco will be honored. Our Explosive Ordnance Disposal Unit (EOD) has been notified and will contact you or Mr. Bobby Clark at (714) 831-6450 to work out the details. It is suggested that the on-site coordinators for EOD and your excavators submit, for approval, a report on the estimated difficulty of the project before proceeding with the excavation and removal phase.

You understand, of course, that other military or emergency tasks for EOD will take precedence over or may delay this project.

J. R. ROBSON
Chief of Staff

TIME/DATE RECEIVED: 0850/11 AUG 88 RECEIVED BY: CAPT LINDSEY

NATURE OF CALL: DUD Ordnance Pick Up

CALLER'S NAME: NORM BURCH or TELEPHONE NUMBER: 858-9206

CALLER'S UNIT/ORGANIZATION: Dick Lind Santa Margarita Construction Company

LOCATION: _____

DIRECTIONS: "See Remarks" Will send a team on 12 July 1988 to inspect area.

POINT OF CONTACT: Dick Lind TIME/DATE REQUIRED: 1430, 880812

TIME OUT: 1430 TIME IN: 1620 ASSISTANCE REQUIRED: DUD LECTURE DEMONSTRATION

TRAINING EXERCISE ROUTINE PICK UP TURN IN DUD CALL TECHNICAL ASSISTANCE

UNSERVICEABLE AMMO DESTRUCTION EMERGENCY RESPONSE BOMB THREAT RANGE SWEEP

REMARKS: Santa Ana and Margarita Parkway First Light take right down at end Catholic Highschool turn in, quick R-off drive way (over)

AIROPS	3837/3838	PMO	3526/2233
SAR	3931	MEDICAL	3176
FIRE	3917	CRASH CREW	3921
ASP	3800/3971	EPA	9-937-0526
STABLES	291:	ATC	2117

PERSONNEL RESPONDING: 1st Lt Schwartz, Maj Felke, Col Fogel

C4 BLOCKS	NON ELECTRIC CAPS	ELECTRIC CAPS
TIME FUZE (FT)	DET CORD (FT)	IGNITERS M60
.50 CALIBER CARTS	TNT	THERMITE GRENADES
SQUIBS	DYNAMITE	OTHER

ENCLOSURE (3) Signature: Paul F. Schwarz DATE: 880812 F-13

Picked up May Bender. Sgt Hyles, a civilian (Sta. Com.) at 1430 and proceeded to Santa Marguitta Construction Co. There, Dick Lind took out into the construction area and showed us 2 piles of 2.75", 4/6 bombs, & HVAR PER Rds. that had been collected. He then took us to another area of the construction site and showed us another pile of the same. Each pile was between 5 and 8 ft high. No fuse components were seen on several items checked. But there was no guarantee that all rounds are safe! A sample of each item was brought back for an EOD graveyard display.

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX G

REAL ESTATE DOCUMENTS

APPENDIX G
REAL ESTATE DOCUMENTS

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- G-1 Declaration of Condemnation, 21 Feb 44.
- G-2 Amended Complaint in Condemnation, 19 Jun 44.
- G-3 Requests for Amended Complaint, 1945.
- G-4 Stipulation For Judgment, 22 Mar 45.
- G-5 Certificate of Attorney For Plaintiff, 26 Mar 45.
- G-6 Receipt ... of Judgment, 2 Apr 45.
- G-7 Stipulation For Judgment, 16 Oct 45.
- G-8 Praecipe For Dismissal, 1 Apr 46.

1 IRL D. BRETT
2 Special Assistant to
3 The Attorney General
4 of the United States
5 808 Federal Building
6 Los Angeles 12, California
7 Madison 7411, Extension 221

8 Attorney for Plaintiff

FILED

FEB 21 1944

EDMUND L. SMITH, Clerk
By *John A. ...* Deputy Clerk

9 IN THE DISTRICT COURT OF THE UNITED STATES
10 IN AND FOR THE SOUTHERN DISTRICT OF CALIFORNIA
11 CENTRAL DIVISION

12 UNITED STATES OF AMERICA,
13 Plaintiff,

14 vs.

15 1800 ACRES OF LAND, MORE OR LESS,
16 SITUATE IN THE COUNTY OF ORANGE,
17 STATE OF CALIFORNIA; COUNTY OF
18 ORANGE, etc., et al,

19 Defendants.

No. 3467-B Civil

ORDER ON PETITION FOR
IMMEDIATE POSSESSION.

20 It appearing from the Complaint on file in the above
21 entitled proceeding, from the Petition for an Order of Im-
22 mediate Possession, and from the Affidavit of Anderson G.
23 Campbell, Captain in the United States Marine Corps Reserve,
24 at El Toro, California, and good cause appearing therefor,
25 IT IS HEREBY ORDERED, ADJUDGED AND DECREED:

26 That the plaintiff United States of America is hereby
27 granted the immediate and exclusive possession of the real
28 property hereinafter described for use by the Navy Department
29 of the United States as a bombing and target range in connection
30 with the United States Marine Corps Air Station at El Toro,
31 California; subject only to the use of the public in and to
32 the public road along the northerly boundary thereof.

33 MET:LG
34 2-21-44

7-1404

U. S. GOVERNMENT PRINTING OFFICE

1 The real property affected by this Order is all that certain
2 part of the Rancho Trabuco in the County of Orange, State of
3 California, generally known and designated as Plano Trabuco or Tra-
4 buco Mesa, said land being more particularly bounded and described
5 as follows:

6 Beginning at the confluence of Trabuco Canyon
7 and Tijeras Canyon, thence from said point of
8 beginning in a general Northerly and Northeasterly
9 direction along the center of Trabuco Canyon to
10 its intersection with the Northerly boundary of
11 said Rancho Trabuco, thence Easterly along the
12 said Northerly boundary of said Rancho Trabuco to
13 the Easterly boundary of said Rancho Trabuco,
14 thence Southerly along the said Easterly boundary
15 of said Rancho Trabuco to its intersection with
16 the center line of Tijeras Canyon, thence South-
17 westerly along the center line of said Tijeras
18 Canyon to the place of beginning, containing 2100
19 acres more or less. Said land if the public lands
20 surveys were extended over the area would comprise
21 portions of Sections 10, 11, 14, 15, 21, 22, 23,
22 27, 28, 32 and 33, Township 6 South, Range 7 West,
23 of the San Bernardino Base and Meridian and
24 portions of Sections 4 and 5, Township 7 South,
25 Range 7 West of the San Bernardino Base and
26 Meridian.

27 EXCEPTING therefrom all land lying North of
28 the road crossing the said Plano Trabuco in an
29 Easterly and Westerly direction, near the Northerly
30 end of said Plano Trabuco, said Excepted area contain-
31 ing about 500 acres.

32 Containing 1800 acres, more or less, after said exception.

DATED: This 21st day of February, 1944, 350 pm

(Handwritten Signature)
UNITED STATES DISTRICT JUDGE

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7-1004

U. S. GOVERNMENT PRINTING OFFICE

1 EUGENE D. WILLIAMS
2 Special Assistant to
3 the Attorney General
4 808 Federal Building
5 Los Angeles 12, California
6 MADISON 7411 Ext. 221
7
8 Attorney for Plaintiff
9 UNITED STATES OF AMERICA
10

FILED

JUN 19 1944

RECORDED & INDEXED
E. M. ...
Equity Clerk

11 IN THE DISTRICT COURT OF THE UNITED STATES
12 IN AND FOR THE SOUTHERN DISTRICT OF CALIFORNIA
13 CENTRAL DIVISION

14 UNITED STATES OF AMERICA,
15
16 Plaintiff,
17
18 vs.

No. 3467-B Civil

19 1800 ACRES OF LAND, MORE OR LESS,
20 SITUATE IN THE COUNTY OF ORANGE,
21 STATE OF CALIFORNIA; COUNTY OF
22 ORANGE, in the State of California,
23 a body politic and corporate;
24 STATE OF CALIFORNIA, a corporation
25 sovereign; CITIZENS NATIONAL TRUST
26 AND SAVINGS BANK OF LOS ANGELES,
27 a corporation; JAMES I. STONE and
28 JANE DOE STONE, his wife; DOE ONE
29 to DOE FIVE HUNDRED, inclusive;
30 ONE DOE CORPORATION, a corporation,
31 to TWENTY-FIVE DOE CORPORATION, a
32 corporation, inclusive; A DOE, as
Administrator or Executor of the
Estate of One Doe, deceased, to
Z DOE, as Administrator or Executor
of the Estate of Twenty-six Doe,
deceased, inclusive; DOE ONE COMPANY,
a copartnership, to DOE TWENTY-FIVE
COMPANY, a copartnership, inclusive,
Defendants.

AMENDED COMPLAINT
IN CONDEMNATION

27 COMES NOW the plaintiff, UNITED STATES OF AMERICA, by Eugene D. Williams,
28 Special Assistant to the Attorney General, as its attorney, on application of the
29 Secretary of the Navy of the United States, and under the direction of and by
30 authority of the Attorney General of the United States, for cause of action against
31 the above named defendants, and each of them, by way of Amended Complaint as a

*MET:RN
6/15/44

1 matter of course, complains and alleges:

2 I

3 That the plaintiff, UNITED STATES OF AMERICA, is entitled to acquire,
4 by the exercise of its power of eminent domain, the property hereinafter described,
5 for the uses and purposes hereinafter set forth.

6 II

7 That in accordance with the provisions of the hereinafter mentioned
8 statutes, said Secretary of the Navy, for and on behalf of the United States, has
9 designated and determined the property hereinafter described is suitable and
10 necessary for the purposes of the United States, and has selected such property
11 for acquisition by the United States in these proceedings, and said selection,
12 designation, and determination ever since have been and now are in full force and
13 effect; that the purposes for which the plaintiff is taking said property, as
14 hereinafter alleged, are necessary and constitute a public use authorized by law;
15 that the acquisition thereof by plaintiff is, and will be, of greatest public
16 benefit and to the least private injury; that plaintiff is informed and believes,
17 and upon such information or belief alleges, that no part of said property has here-
18 tofore been appropriated to any public use, but that if any portion has so been
19 appropriated, the use to which said property is herein sought to be condemned and
20 appropriated is a more necessary and paramount public use.

21 III

22 That the plaintiff has named herein by their true names, or by fictitious
23 names, all defendants known by it to have some interest in said property; that
24 there may be other persons having some interests therein whom the plaintiff hereby
25 identifies as unknown persons, and makes such unknown persons defendants herein
26 to the end that said property may be vested in the United States of America to
27 the extent herein prayed for.

28 IV

29 That defendants Doe One to Doe Five Hundred, inclusive, are named herein
30 as defendants; that defendants One Doe Corporation to Twenty-five Doe Corporation,
31 inclusive, are each corporations organized and existing under the laws of one
32

16-2998-1

1 of the States of the United States; that A Doe to Z Doe, respectively, are each
2 the duly appointed, qualified, and acting Administrator or Executor of the Estates
3 of One Doe, deceased, to Twenty-six Doe, deceased, respectively; that Doe One
4 Company to Doe Twenty-five Company, inclusive, are each copartnerships; that all
5 defendants and persons named in this action by a designation including the word
6 "Doe" are each sued under fictitious names because the truenames of such persons
7 or defendants are at this time unknown to plaintiff, but upon ascertaining same,
8 plaintiff will ask leave of Court to insert said true names for said fictitious
9 names.

10

V

11 That this proceeding is brought by the plaintiff under the authority of
12 the Acts of Congress approved August 1, 1888 (25 Stat. 357), August 18, 1890
13 (26 Stat. 315, 316), July 2, 1917 (40 Stat. 241), April 11, 1918 (40 Stat. 518;
14 U.S.C. sec. 171), February 26, 1931 (46 Stat. 1421; 40 U.S.C. sec. 258a), March
15 27, 1942 (Second War Powers Act, 1942; Public Law 507 - 77th Congress), and Acts
16 amendatory thereof and supplementary thereto, and the Acts of March 26, 1943
17 (Public Law 19, 78th Congress), and June 26, 1943 (Public Law 92, 78th Congress).

18

VI

19 That defendant County of Orange is now, and at all times herein mentioned
20 has been, a body politic and corporate, and a political subdivision of the State
21 of California, and within the Southern District of California, Central Division,
22 and is now, and at all times mentioned has been, organized and existing under
23 the laws of the State of California; that defendant State of California is now,
24 and at all times herein mentioned has been, a corporation sovereign and one of
25 the states comprising the United States of America.

26

27 That Citizens National Trust and Savings Bank of Los Angeles is a
28 corporation organized and existing under the laws of the State of California with
29 its present place of business in the City of Los Angeles, County of Los Angeles,
30 State of California, and is also a national banking association organized and
31 existing under and by virtue of the laws of the United States.

32

*

- 3 -

VII

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That the estate and interest in and to said real property hereinafter described which plaintiff intends to and seeks to take and condemn by this proceeding is a term for years ending June 30, 194⁴₅, subject, however, to the right of the public to use that certain road along the Northerly boundary of said real property and together with the right to remove within a reasonable time after the expiration of the term any and all improvements and structures placed thereon by or for the United States.

That the real property in which said term of years is to be taken and condemned, as hereinabove set forth, is described as follows:

1 All that certain part of the Rancho Trabuco in
2 the County of Orange, State of California, generally known
3 and designated as Plano Trabuco or Trabuco Mesa, said land
4 being more particularly bounded and described as follows:

5 Beginning at the confluence of Trabuco Canyon
6 and Tijeras Canyon, thence from said point of
7 beginning in a general Northerly and Northeasterly
8 direction along the center of Trabuco Canyon to
9 its intersection with the Northerly boundary of
10 said Rancho Trabuco, thence Easterly along the
11 said Northerly boundary of said Rancho Trabuco to
12 the Easterly boundary of said Rancho Trabuco,
13 thence Southerly along the said Easterly boundary
14 of said Rancho Trabuco to its intersection with
15 the center line of Tijeras Canyon, thence South-
16 westerly along the center line of said Tijeras
17 Canyon to the place of beginning, containing 2100
18 acres more or less. Said land if the public lands
19 surveys were extended over the area would comprise
20 portions of Sections 10, 11, 14, 15, 21, 22, 23,
21 27, 28, 32 and 33, Township 6 South, Range 7 West,
22 of the San Bernardino Base and Meridian and
23 portions of Sections 4 and 5, Township 7 South,
24 Range 7 West of the San Bernardino Base and
25 Meridian.

26 EXCEPTING therefrom all land lying North of
27 the road crossing the said Plano Trabuco in an
28 Easterly and Westerly direction, near the Northerly
29 end of said Plano Trabuco, said excepted area
30 containing about 300 acres.

31 Containing 1300 acres, more or less, after
32 said exception.

VIII

1
2 That the defendants named in the caption of this Amended Complaint by
3 true names are the apparent and presumptive owners or claimants of all or any
4 part or of some interest in the real property sought to be taken and condemned by
5 this Amended Complaint, as hereinabove set forth and described.

6 IX

7 That the Secretary of the Navy of the United States has selected the
8 estate and interest hereinabove set forth in the real property hereinabove
9 described for acquisition by the plaintiff for use in connection with military
10 purposes, to wit: for establishment of and use as a bombing range and target
11 in connection with the Marine Corps Air Station at El Toro, California, and for
12 such other uses as may be authorized by Congress or by Executive Order, and has
13 determined that immediate and exclusive possession of said real property is
14 necessary to the prosecution of the war.

15 X

16 That under the provisions of the Act of July 2, 1917 (40 Stat. 241),
17 as amended by said Second War Powers Act, 1942, it is provided:

18 "Upon or after the filing of the condemnation petition,
19 immediate possession may be taken and the property may be
20 occupied, used and improved for the purposes of the Act
21 notwithstanding any other law."

22 That the Secretary of the Navy has, pursuant to said statute, determined
23 that the immediate and exclusive possession of said property is vital to the
24 successful prosecution of the war; that pursuant to such determination and on
25 the application of the Secretary of the Navy and under the direction of the Attorney
26 General of the United States, counsel for the plaintiff petitioned the above
27 entitled Court for an Order of Immediate Possession in accordance with the statute
28 in this paragraph mentioned; that thereupon the above entitled Court, on February
29 21, 1944, duly gave and made an Order granting to the plaintiff the immediate
30 and exclusive possession of the real property hereinabove described and as herein-
31 above limited; that pursuant to said Order, plaintiff entered into the possession
32

1 of said property, and is now and ever since has been in the possession and occupancy
2 of said real property; and that plaintiff prays that said Order of Immediate
3 Possession be continued in force and effect.

4 XI

5 That plaintiff is informed and believes, and upon such information and
6 belief, alleges that the real property in which the plaintiff seeks to take and
7 condemn an estate and interest, as hereinabove set forth, consists of a separate
8 and distinct parcel of land.

9 WHEREFORE, plaintiff prays judgment:

- 10 1. That the Court ascertain and assess the value of the estate herein
11 sought to be taken and condemned.
12
13 2. Adjudging that the uses for which plaintiff takes and condemns said
14 land are necessary public uses of the plaintiff, and that the uses to which said
15 property are to be applied are uses authorized by law; and adjudging that said
16 land and property shall be deemed to be condemned and taken for the use of the
17 United States of America for the purposes and uses hereinbefore set forth.
18
19 3. Vesting in the plaintiff the title and estate in and to the land
20 hereinbefore described, as hereinbefore alleged, and adjudging that the said land
21 shall be deemed to be condemned and taken for the use of the United States of
22 America for the purposes and uses hereinbefore set forth; and further adjudging
23 that the right to just compensation for the said land hereinabove described be
24 vested in the persons entitled thereto as their respective interests may appear
25 and be established by judgment herein; and further adjudging that all liens or
26 encumbrances held by any party herein against the condemned property be either
27 satisfied out of the award to be made in this proceeding, or subordinated to the
28 estate hereby taken and condemned.
29
30 4. For such other and further relief as the Court deems meet and proper
31 in the premises and as the nature of the case may require.

32 DATED: This 16th day of June, 1944.

EUGENE D. WILLIAMS, Special Assistant to
the Attorney General

MARTELL E. THOMPSON, Special Attorney,
Lands Division, Department of Justice

By Marzell E. Thompson
Attorneys for Plaintiff

ADDRESS ONLY TO
"THE ATTORNEY GENERAL"
AND REFER TO
ENTIRE AND NUMBER

DEPARTMENT OF JUSTICE
WASHINGTON 25, D. C.

RJL - EBS
33-5-906-2

March 7, 1945

Air Mail

RECEIVED
MAR 10 1945
U.S. DEPARTMENT OF JUSTICE
RECEIVED

Mr. Eugene D. Williams
Special Assistant to the
Attorney General
Federal Building
Los Angeles 12, California

Dear Mr. Williams:

CFH

Reference is made to the condemnation proceeding entitled United States v. 1,800 acres of land, more or less, in Orange County, California, County of Orange, et al., Civil No. 3467-B, instituted for use in connection with the Marine Corps ~~AIT~~ Station, El Toro.

There is enclosed a certified copy of a letter dated February 28, 1945, from the Acting Secretary of the Navy to the Attorney General, requesting that the complaint in condemnation be amended to state that the estate sought is a term for years ending June 30, 1944.

Accordingly, please take the necessary steps to comply with the Acting Secretary's request, and forward certified and uncertified copies of the amended pleadings filed.

Respectfully,
For the Attorney General

J. Edward Williams
J. EDWARD WILLIAMS
Acting Head, Lands Division

Incl. No.
610222



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EUGENE D. WILLIAMS
Special Assistant to the
Attorney General of the
UNITED STATES

808 Federal Building
Los Angeles 12, California
MADison 7411, Ext. 221
Attorney for Plaintiff

FILED

OCT 16 1945

John A. Childers
Deputy Clerk

IN THE DISTRICT COURT OF THE UNITED STATES
SOUTHERN DISTRICT OF CALIFORNIA
CENTRAL DIVISION

UNITED STATES OF AMERICA,
Plaintiff,
vs.
1800 ACRES OF LAND, MORE OR
LESS, IN THE COUNTY OF ORANGE,
STATE OF CALIFORNIA; etc.,
et al.,
Defendants.)

No. 3467-B Civil

LETTERS OF AUTHORITY
FOR
AMENDMENT OF AMENDED COMPLAINT IN CONDEMNATION

GFH:MM
10-5-45

AND REFER TO

NAVY DEPARTMENT

WASHINGTON 25, D. C.

ND11/H1-13
C5-36-ET-1
F-5-3/BAO:mr

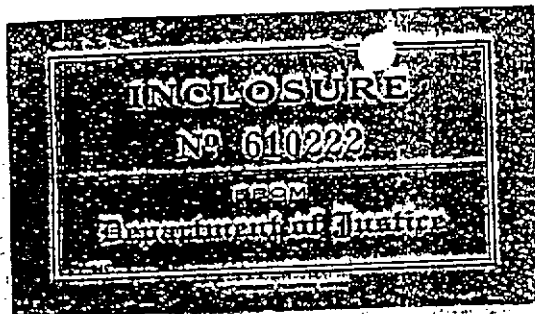
February 28, 1945

The Honorable
The Attorney General

Sir:

Reference is made to the condemnation proceeding entitled "United States of America v. 1,800 acres of land, more or less, in Orange County, California, County of Orange, et al.," Civil No. 3467-B, instituted to acquire land for the establishment of a bombing target in connection with the Marine Corps Air Station, El Toro, California. Your file number is 33-5-906-2.

A lease has been negotiated with the owner for the period subsequent to July 1, 1944. It is requested, therefore, that the petition in condemnation be amended to state that the estate sought is a term for years ending June 30, 1944.



Very truly yours,

Acting R. L. A. Reed

Pursuant to T. 28 U.S. Code, Sec. 661, I certify this to be a true copy of the original record in this Department.

Edward Hillen
Acting Head, Lands Division
Department of Justice

1 EUGENE D. WILLIAMS
2 Special Assistant to
3 the Attorney General
4 909 Federal Building
5 Los Angeles 12, California
6 Madison 7411, Ext. 221
7 Attorney for Plaintiff

FILED

MAR 22 1945

EDMUND L. SMITH, Clerk
By *[Signature]*
Deputy Clerk

8 IN THE DISTRICT COURT OF THE UNITED STATES
9 IN AND FOR THE SOUTHERN DISTRICT OF CALIFORNIA
10 GENERAL DIVISION

11 UNITED STATES OF AMERICA,	)	11. 5457-B Civil
)	
12 Plaintiff,	)	STIPULATION FOR
	)	JUDGMENT
13 vs.	)	(As to Leasehold interest of
	)	Defendant James Irving Stone)
14 1000 ACRES OF LAND, MORE OR LESS,)	
15 SITUATE IN THE COUNTY OF ORANGE,)	
STATE OF CALIFORNIA; et al.,)	
16 Defendants.)	

17
18 IT IS HEREBY STIPULATED by and between the plaintiff in the
19 above entitled matter, through its attorney of record, and the defendant
20 executing this Stipulation; that

21 WHEREAS the above proceeding has been instituted by the plain-
22 tiff to determine the just compensation to be paid for the condemnation
23 and taking by plaintiff of the property and estate described in Para-
24 graph V hereof; and

25 WHEREAS the parties hereto desire to agree upon the compensa-
26 tion to be paid for such condemnation and taking;

27 NOW, THEREFORE, IT IS STIPULATED AND AGREED:

28 I

29 That to induce plaintiff to execute this stipulation defend-
30 ant voluntarily appears in this action and expressly waives service of
31 process, notice of setting for trial, trial and right of trial or hear-
32 ing on the issues, the making, service and filing of Findings of Fact

3/16/45

7-1404

1 and Conclusions of Law, and Notice of Entry of Judgment; and agrees
2 that judgments may be entered herein in accordance with the terms of
3 this Stipulation.

4 II

5 That the sum of \$3,675.00, hereinafter called "Compensation"
6 is the fair, just and adequate compensation, inclusive of interest, to
7 be paid to the said defendant for the condemnation and taking of said
8 property by Plaintiff, including crops and crop damage.

9 III

10 That the Judgment to be entered herein pursuant hereto, shall
11 provide for the disbursement of said compensation to JAMES IRVING
12 STONE; and the Court may reserve jurisdiction to enter such further
13 orders and decrees as may be necessary to effect the distribution of
14 such compensation out of the Registry of this Court.

15 IV

16 That said Judgment shall also decree that all right, title,
17 estate and interest heretofore had, owned and possessed by said de-
18 fendant in and to the hereinafter described real estate, or any part
19 thereof, shall be divested out of said defendant and be vested in
20 Plaintiff, free and clear of any interest or claim of said defendant
21 therein whatsoever, including crops and crop damage.

22 V

23 That the property and the estate therein affected by this
24 Stipulation is situate in the State of California, County of Orange,
25 and is particularly described as follows:

26 That certain leasehold estate and interest held, owned and
27 possessed by the undersigned defendant as lessee under a lease dated
28 the 12th day of January, 1944, between Citizens National Trust &
29 Savings Bank of Los Angeles, Trustee under the Will of Jerome O'Neill,
30 Deceased, and the said defendant, demising 900 acres, more or less,
31 in the Plano Trabuco, located in Sections 14 and 15 and 21 and 22,

32
*
7-1404

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Township 7 South, Range 7 West, of the San Bernardino Base and Meridian.

DATED: This 22 day of March, 1945.

UNITED STATES OF AMERICA

By Eugene J. Williams

Special Assistant to
The Attorney General
Attorney for Plaintiff

James Irving Stone
James Irving Stone

1 EUGENE D. WILLIAMS
2 Special Assistant to the
3 Attorney General of the
4 UNITED STATES

5 808 Federal Building
6 Los Angeles 12, Calif.

7 Attorney for Plaintiff

FILED

MAR 23 1945

EDMUND L. SMITH, Clerk
By *[Signature]*
Deputy Clerk

8 IN THE DISTRICT COURT OF THE UNITED STATES
9 SOUTHERN DISTRICT OF CALIFORNIA
10 CENTRAL DIVISION

11 UNITED STATES OF AMERICA,	) No.	3467-B	Civil
12 Plaintiff,)		
13 vs.)		
14 1800 ACRES OF LAND)		
15 IN THE COUNTY OF ORANGE)		
16 State of California, etc., et al.,)		
17 Defendants.)		
	)	As to	-- No. --
	)	Judgment entered	March 22, 1945
	)	C.O. Book	31 Page 448

18 TO: EDMUND L. SMITH, Clerk of the above-entitled Court:

19 Pursuant to the terms and provisions of the Judgment and Decree in Con-
20 demnation as to the above numbered parcel,

21 YOU ARE HEREBY AUTHORIZED AND DIRECTED to disburse the following sum
22 which I certify is on deposit in the Registry of the Court:

23 TO:

24 JAMES IRVING STONE \$3,675.00

25 DATED: March 23, 1945.

26 APPROVED:
27 *[Signature]*
28 Special Assistant to the Attorney
29 General

30 RECEIVED above check this
31 day of MAR 27 1945, 1945.

32 *[Signature]*
Lands Division, Dept of Justice
L.F.S.

EUGENE D. WILLIAMS
Special Assistant to
the Attorney General

By *[Signature]*
Special Attorney
Lands Division
Department of Justice

GFM:VR
/23/45

NATIONAL ARCHIVES--PACIFIC SOUTHWEST REGION
 APPENDIX "A"

Case No. 3467-B Civil March 23, 1945
 (date)

Parcel No. _____, or

Portion of Parcel No. 900 acre portion of whole
 (state what portion)

Certificate No. One

STATEMENT OF CURRENT CONDITION OF REGISTRY ACCOUNT
 (as to above Parcel or portion indicated)

1. (a) Amount of Judgment for above Parcel, or Portion thereof, for:
 (1) FEE Title. (1) \$ _____ *
- (2) LEASEHOLD per year From 2/21/44 to 6/30/44 (2) \$ 3,675.00 *
 (No., Yr., Term) (Original term in Judgment.)
 Including crops and crop damage
- (b) Disbursement is Pursuant to ORDER Filed _____
2. Total Amount Deposited in Registry to date \$ 3,675.00
3. Total Amount Distributed by Previous Certificate \$ 00
4. Amount Available for Distribution, This Parcel, or Portion \$ 3,675.00
5. Amount Paid by This Certificate for:
FEE, or LEASEHOLD for _____ of _____
 (indicate which) (No., Yr., Term) (give dates)
- (a) To _____ \$ _____
 _____ \$ _____
 (taxing bodies)
- (b) To _____ \$ _____
 (mortgages and other encumbrances)
- (c) To JAMES IRVING STONE \$ 3,675.00
 _____ \$ _____
 (Tenants, Referee to Trust, etc.)
- (d) To _____ \$ _____
 _____ \$ _____
 _____ \$ 3,675.00
 (owner or owners of record)
6. Balance Available for Distribution, Above Parcel, or Portion \$ 00

*Leave blank if Judgment not obtained.

CERTIFIED CORRECT
George F. Hurley
 GEORGE F. HURLEY

1 EUGENE D. WILLIAMS
Special Assistant to the
2 Attorney General
3 808 Federal Building
Los Angeles 12, California
4 Attorney for Plaintiff

FILED

APR 2 - 1945

By John A. Childs
Deputy Clerk

5
6
7 IN THE DISTRICT COURT OF THE UNITED STATES
8 IN AND FOR THE SOUTHERN DISTRICT OF CALIFORNIA
CENTRAL DIVISION

9 UNITED STATES OF AMERICA,) No. 3467-B Civil
10 Plaintiff,)
11 vs.) RECEIPT AND FULL SATISFACTION
12 1800 ACRES OF LAND, MORE OR) OF JUDGMENT
13 LESS, IN THE COUNTY OF ORANGE,)
14 STATE OF CALIFORNIA, etc., et al.,)
Defendants) (As to ----- Only)

15 RECEIPT of United States District Court check No. 6529 in the sum of
16 \$ 3,675.00, is hereby acknowledged by JAMES IRVING STONE
17 _____ in full satisfaction of that certain Judgment
18 made and entered herein ~~on~~ March 22, 1945, in the above entitled
19 action, and recorded in C. O. Book 31, Page 468.

20 The Clerk of the above entitled Court is authorized to enter such
21 satisfaction of Judgment upon written request of the plaintiff or its attorney

22 DATED: This 24 day of March, 1945.

23 James Irving Stone
James Irving Stone

24
25 STATE OF CALIFORNIA)
26 County of Orange) ss: _____

27 On this 24 day of March, 1945, before me a Notary Public in
28 and for said County and State, duly commissioned and sworn, personally ap-
29 peared James Irving Stone
30 known to me to be the person who executed the within instrument, and acknowl-
31 edged to me that he executed the same.

32 WITNESS my hand and seal the day and year first above written
Richard Smith
Notary Public in and for said
County and State

*GFH:VR
3/27/45

My Comm. Expires February 28, 1947.

65

1 EUGENE D. WILLIAMS
2 Special Assistant to the
3 Attorney General of the
4 UNITED STATES
5 808 Federal Building
6 Los Angeles 12, California
7 MADISON 7411, Ext. 221
8 Attorney for Plaintiff

FILED

OCT 16 1945

RECORDED
INDEXED
10/16/45
Clerk

9 IN THE DISTRICT COURT OF THE UNITED STATES
10 SOUTHERN DISTRICT OF CALIFORNIA
11 CENTRAL DIVISION

12 UNITED STATES OF AMERICA,) No. 3467-B Civil
13 Plaintiff,)
14 vs.)
15 1800 ACRES OF LAND, MORE OR) STIPULATION FOR JUDGMENT AS
16 LESS, IN THE COUNTY OF ORANGE,) TO THE INTEREST OF CITIZENS
17 STATE OF CALIFORNIA; CITIZENS) NATIONAL TRUST AND SAVINGS
18 NATIONAL TRUST AND SAVINGS) BANK OF LOS ANGELES, as
19 BANK OF LOS ANGELES, as Trustee;) Trustee, etc.
20 etc., et al.,)
21 Defendant.)

22 IT IS HEREBY STIPULATED by and between the Plaintiff in the
23 above entitled matter, through its attorney of record, and the
24 defendant executing this Stipulation; that

25 WHEREAS the above proceeding has been instituted by the
26 Plaintiff to determine the just compensation to be paid for the
27 condemnation and taking by Plaintiff of the property and estate
28 described in Paragraph V hereof; and

29 WHEREAS the parties hereto have agreed upon the compensation
30 to be paid for such condemnation and taking;

31 NOW, THEREFORE, IT IS STIPULATED and AGREED:

32 I

That to induce Plaintiff to execute this Stipulation, defendant
voluntarily appears in this action and expressly waives service of

*GPH:MM
10-3-45

1 process, notice of setting for trial, trial and right of trial or
2 hearing on the issues, the making, service and filing of Findings
3 of Fact and Conclusions of Law, and Notice of Entry of Judgment;
4 and agrees that judgments may be entered herein in accordance with
5 the terms of this Stipulation.

6 II

7 That the sum of \$2,250, hereinafter called "Compensation", is
8 the fair, just and adequate compensation, inclusive of interest, to
9 be paid to the said defendant for the condemnation and taking of
10 said property by Plaintiff, including crops and crop damage.

11 III

12 That the judgment to be entered herein pursuant hereto, shall
13 provide for the disbursement of said compensation to the CITIZENS
14 NATIONAL TRUST AND SAVINGS BANK OF LOS ANGELES, as trustee, under
15 Decree of Final Distribution made March 30, 1928, by the Superior
16 Court of San Diego County, California, in the estate of Jerome
17 O'Neill; and the Court may reserve jurisdiction to enter such
18 further orders and decrees as may be necessary to effect the dis-
19 tribution of such compensation out of the Registry of this Court.

20 IV

21 That said judgment shall also decree that there shall be
22 vested in the Plaintiff, free and clear of any interest or claim
23 of said defendant therein whatsoever, including claims for crops
24 and crop damage in and to the hereinafter described real estate for
25 the term, and subject to the conditions more fully set out in the
26 Amended Complaint in Condemnation as amended heretofore filed herein.

27 V

28 That the property affected by this Stipulation is situate in
29 the State of California, County of Orange, and is particularly
30 described as follows:

31 Beginning at the confluence of Trabuco Canyon
32 and Tijeras Canyon, thence from said point of begin-

4*

1 ning in a general Northerly and Northeasterly direc-
2 tion along the center of Trabuco Canyon to its inter-
3 section with the Northerly boundary of said Rancho
4 Trabuco, thence Easterly along the said Northerly
5 Boundary of said Rancho Trabuco to the Easterly bound-
6 ary of said Rancho Trabuco, thence Southerly along the
7 said Easterly boundary of said Rancho Trabuco to its
8 intersection with the center line of Tijeras Canyon,
9 thence Southwesterly along the center line of said
10 Tijeras Canyon to the place of beginning, containing
11 2100 acres more or less. Said land if the public lands
12 surveys were extended over the area would comprise
13 portions of Sections 10, 11, 14, 15, 21, 22, 23, 27,
14 28, 32 and 33, Township 6 South, Range 7 West, of the
15 San Bernardino Base and Meridian and portions of
16 Sections 4 and 5, Township 7 South, Range 7 West of
17 the San Bernardino Base and Meridian.

18 EXCEPTING therefrom all land lying North of
19 the road crossing the said Plano Trabuco in an
20 Easterly and Westerly direction, near the Northerly
21 end of said Plano Trabuco, said excepted area contain-
22 ing about 300 acres.

23 Containing 1800 acres, more or less, after
24 said exception.

25 The estate and interest for which the said compensation is to be
26 paid is for a term of years ending June 30, 1944, together with the
27 right to remove within a reasonable time after the expiration of
28 the term, any and all improvements and structures placed thereon by
29 or for the United States, and also the value of the crops, the
30 defendant, Citizens National Trust and Savings Bank of Los Angeles,
31 as trustee, aforesaid, would have received, under its lease dated
32 January 12, 1944, to defendant, James Irving Stone, all that portion

*

1 of the premises immediately above described which is set out and
2 described in the Stipulation dated March 22, 1945, between Plaintiff,
3 United States of America, and the defendant, James Irving Stone,
4 duly filed in this cause, which Stipulation the defendant, Citizens
5 National Trust and Savings Bank of Los Angeles, as trustee,
6 ratifies, approves, and confirms.

7 VI

8 That the Plaintiff and defendant having entered into a lease
9 of the premises described in Paragraph V of this Stipulation for the
10 term commencing July 1, 1944, to June 30, 1945, with the right of
11 Plaintiff as lessee to renew the same from year-to-year until
12 twelve months after the existing states of war, upon written notice
13 given thirty days before expiration of said lease or any extension
14 thereof, the Amended Complaint in Condemnation filed herein on
15 June 19, 1944, may, upon approval of the Court, be amended on its
16 face by striking the number "1945" in line 4, page 4 of said
17 Amended Complaint, and substituting in lieu thereof the number "1944."

18 DATED: This 11 day of October 1945.

19 UNITED STATES OF AMERICA

20 BY: Eugene D. Williams
21 EUGENE D. WILLIAMS
22 Special Assistant to
23 the Attorney General

24 CITIZENS NATIONAL TRUST AND
25 SAVINGS BANK OF LOS ANGELES,
26 as Trustee under the Will of
27 Jerome O'Neill, Deceased

28 By: A. Mudge
29 Vice President

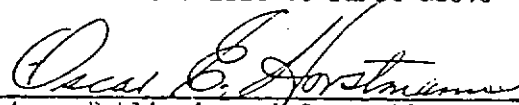
30 By: [Signature]
31 Assistant ~~Secretary~~
32 Trust Officer

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STATE OF CALIFORNIA)
)SS
COUNTY OF LOS ANGELES)

On this 11th day of October, 1945, before me
OSCAR E. HORSTMANN, a Notary Public in and for said
County and State, residing therein, duly commissioned and qualified,
personally appeared, N. E. MUDGE, known to me to be the
Vice President, and E. M. PETERSON, known to me to be the
Assistant ~~Secretary~~^{Trust Officer} of the CITIZENS NATIONAL TRUST AND SAVINGS
BANK OF LOS ANGELES, as Trustee under the Will of Jerome O'Neill,
Deceased, the National Banking Association that executed the
within instrument, known to me to be the persons who executed the
within instrument on behalf of the association therein named, and
acknowledged to me that such association executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed
my official seal the day and year in this Certificate first above
written.


Notary Public in and for said County
and State

(SEAL)

My Commission Expires April 18, 1949

1 EUGENE D. WILLIAMS
2 Special Assistant to
3 the Attorney General
4 808 Federal Building
5 Los Angeles 12, California
6 Madison 7411, Station 221
7
8 Attorney for Plaintiff

FILED

APR 1 1946

W. H. Clifton
Deputy Clerk

9 IN THE DISTRICT COURT OF THE UNITED STATES
10 IN AND FOR THE SOUTHERN DISTRICT OF CALIFORNIA
11 CENTRAL DIVISION

12 UNITED STATES OF AMERICA,)
13)
14 Plaintiff,)
15 v.)
16 1800 ACRES OF LAND, MORE OR)
17 LESS, IN THE COUNTY OF ORANGE,)
18 STATE OF CALIFORNIA; etc., et al,)
19 Defendants.)

No. 3467-B Civil

PRECEIPE FOR DISMISSAL

20 TO THE CLERK OF SAID COURT:

21 SIR:

22 Please enter the dismissal as to the following named parties de-
23 fendants in the above entitled action, County of Orange, in the State of
24 California, a body politic and corporate; State of California, a corporation
25 sovereign; Jane Doe Stone; Doe One to Doe Five Hundred, inclusive; One Doe
26 Corporation, a corporation, to Twenty-Five Doe Corporation, a corporation,
27 inclusive; A Doe, as Administrator or Executor of the Estate of One Doe,
28 deceased, to Z Doe, as Administrator or Executor of the Estate of Twenty-six
29 Doe, deceased, inclusive; Doe One Company, a copartnership, to Doe Twenty-five
30 Company, a copartnership, inclusive.

31 DATED: This 1 day of April, 1946.

Charles E. Collett

32 CHARLES E. COLLETT, Special Assistant

Judgment entered APR 1 - 1946 to the Attorney General

Booked APR 1 - 1946

C.o. Book 37 Page 490

*CEC:RML
4-1-46

Edmund L. Smith, Clerk

By

W. H. Clifton
Deputy

1 EUGENE D WILLIAMS
2 Special Assistant to
3 The Attorney General
4 of the United States
5
6 803 Federal Building
7 Los Angeles 12 California
8 Madison 7411 Exten 221
9
10 Attorney for Plaintiff

FILED

APR 1 1946

RECEIVED
U.S. DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
Central Division
Los Angeles, Calif.

11 IN THE DISTRICT COURT OF THE UNITED STATES
12 IN AND FOR THE SOUTHERN DISTRICT OF CALIFORNIA
13 CENTRAL DIVISION

14 UNITED STATES OF AMERICA,)
15) No. 3467-B Civil
16 Plaintiff,)
17)
18 vs.)
19) PETITION FOR CLOSING THE
20) ACTION AND REMOVING IT
21 1300 ACRES OF LAND,) FROM THE DOCKET OF ACTIONS
22 MORE OR LESS, IN THE COUNTY OF)
23 ORANGE STATE OF)
24 CALIFORNIA, etc., et al.,)
25)
26 Defendants.)

27 COMES NOW Charles E. Collett, Special Assistant to the
28 Attorney General, Lands Division, Department of Justice, and one of the
29 attorneys for the plaintiff in the above entitled action and respectfully
30 shows the Court:

31 That all necessary parties to the above entitled action have been
32 served with process,

33 That the rights of all parties in and to said action have been
34 fully determined and judgments of this Court have been entered with respect
35 thereto and all sums awarded to the respective defendants as just compensa-
36 tion for the taking of the lands involved in the above entitled action have
37 been paid in accordance with said judgments and Receipt and Full Satis-
38 faction of Judgment on file herein.

39 That all defendants having the suffix of "Doc" have been dis-
40 missed out of said action.

* CES:RAL
4-1-46

1 Estate taken in said action was for a term of years and, therefore,
2 no Certificate of Inspection was necessary nor was one obtained.

3 That all proceedings necessary to conclude such cause has been
4 had and nothing remains to be done in connection with said action, save and
5 except an entry of the Order directing the above entitled action to be
6 stricken from the docket of actions of the Court and directing that all
7 jurisdiction of the action be terminated.

8 WHEREFORE, your petitioner prays that an Order be entered herein
9 directing that the above entitled cause be stricken from the docket of
10 actions of the court, and further directing that all jurisdiction of said
11 cause be terminated.

12 DATED: This 1st day of April, 1946.

13 *Charles E. Collett*
14 Charles E. Collett, Special Assistant
15 to the Attorney General

16 STATE OF CALIFORNIA)
17 COUNTY OF LOS ANGELES) ss

18 Charles E. Collett, being first duly sworn, deposes and says that
19 he is one of the attorneys for the plaintiff and signed the above Petition,
20 that he has read the foregoing Petition and knows the contents thereof and
21 that the same is true to the best of his knowledge, information and belief.

22 *Charles E. Collett*
23 Charles E. Collett, Special Assistant
24 to the Attorney General

25 Subscribed and sworn to before
26 me this 1 day of April, 1946.

27 *Arch B. Mc Lay*
28 Notary Public in and for said
29 County and State.

30 My Commission Expires 11/27/49 (JUAL)

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX H

NEWSPAPERS/JOURNALS

APPENDIX H
NEWSPAPERS/JOURNALS

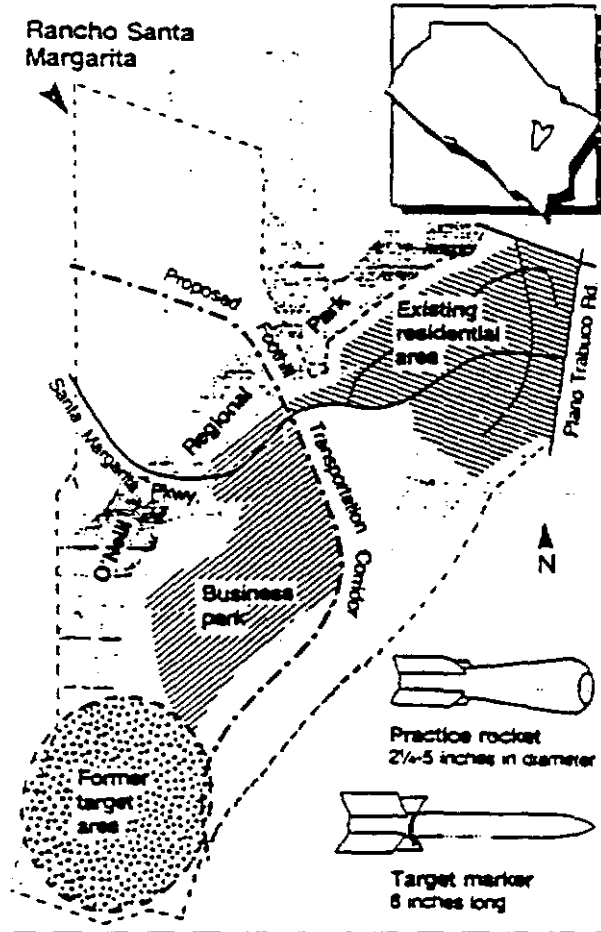
Table of Contents

- H-1 "...Buried Fake Bombs", 1987 (Ref B-18).
H-2 "Unearthing of Bomb...", 1987 (Ref B-17).
H-3 "Rocket Unearthed...", 1987 (Ref B-19).

EXHIBIT H

WW II rockets unearthed

The Rancho Santa Margarita Co. is alerting homeowners that 40-year-old devices may be buried in the planned community. The devices — a target marker and an unarmed practice rocket — were used by the Marines in the 1940s and 50s for bombing practice.



Residents put on alert for buried fake bombs

By Cheryl Downey
The Register

RANCHO SANTA MARGARITA — The Corsairs and Helldivers flew in from El Toro Marine Corps Air Station, gunning for mock Japanese destroyers and aircraft outlined in lime on the dusty fields of the Plano Trabuco.

Practice rockets dropped on the targets, some thudding harmlessly into the earth and others exploding small charges and expelling puffs of powder so pilots could check their aim.

Forty years later, some of those practice rockets have been unearthed north of the World War II and postwar practice range as construction crews dig into the land to build a business park in this new planned community.

Letters alerting residents to the existence of practice rockets were sent out late last week by the Santa Margarita Co. on the remote chance that one might

be found in existing residential areas five miles north of abandoned range, said county spokeswoman Joan Condino.

"It's very unlikely that anything could happen because they've been buried for years," she said. Even if a rocket with an intact charge were found, she said, "The firing mechanism likely is rusted shut."

No live ammunition was for practice on the range, she said.

Hundreds of the rockets have been collected and hauled away without over the years, Condino said.

From 1944 through 1956 U.S. Marine Corps leased acres of land on the Plano Trabuco for a practice range according to information the company obtained from the Marine Corps. That area, still undeveloped, is now in the southernmost part of the 5,000-acre planned community.

Please see ROCKET

ROCKETS

FROM B1

During decades of ranching and farming on the land owned by the Richard J. O'Neill family, hundreds of the practice rockets were found and stockpiled by Rancho Mission Viejo employees, Condino said.

In 1984, the Santa Margarita Co. — preparing to build a new community — asked the Marine Corps to remove the stockpiled rockets and any others it could find. The area was swept with metal detectors and about three tons of practice rockets and target markers were removed, Condino said.

Most were harmless dummies, but a small percentage contained remnants of the signal charges, she said. It is not known if they remained intact enough to be detonated.

None of the rockets has been found in developed residential areas, even when 3 to 4 feet of topsoil

was dug up during grading, Condino said.

But two of the devices were uncovered by construction crews working in the business park just north of the old practice range this year. One was 8 feet underground, she said.

"We realized that it was not an aberration and we might find more," Condino said. "Even though it is highly unlikely that a resident would find one and even less likely that someone would be hurt by one, we want them to know what to do."

Letters mailed to the approximately 3,000 residents Thursday include a fact sheet and sketches of the devices and urge residents to use caution if one is found.

The target markers are about 8 inches long and contain a small charge that expels a powder. Practice rockets from 2 to 5 inches in diameter were completely unarmed.

When the devices are found and

identified as military, they are removed and destroyed by the Marine Corps, Condino said.

Staff Sgt. Jim Hager, spokesman for the El Toro Marine Corps Air Station, said Monday that the Corps would not comment on the old bombing practice range because the land no longer belonged to the military.

Jim Sleeper, a county historian, said Orange County once had many military installations but the Plano Trabuco area was its only bombing-practice range.

Marine pilots of Dauntless, Corsair and Helldiver aircraft practiced their aim until such flights shifted to San Clemente Island off San Diego County in the 1950s, he said.

Resident Michelle Browe said the letter about the practice rockets made her a little nervous that her children might find one, although her neighbors all said it was no big deal.

Unearthing of Bomb 'Blanks' Spurs Warning

By MARCIDA DODSON, *Times Staff Writer*

Residents of Orange County's newest community, Rancho Santa Margarita, have been warned to be on the lookout for World War II-era "target markers" buried in their yards, but so far none has been sighted.

The Marines formerly used the bomb-shaped devices during aerial bombing practice. "It was like using blanks," Santa Margarita Co. spokeswoman Joan Condino said.

The Marine Corps used a 503-acre section of the flat plain, called the Plano Trabuco, near Saddleback Mountain from about 1944 to 1956 for target practice, Condino said, citing information Santa Margarita Co. has obtained from the military. The Plano Trabuco makes up most of what is now the 5,000-acre Rancho Santa Margarita community, located in southeast Orange County, between Mission Viejo and Coto de Caza.

The target markers are of two types, she said. One is an eight-inch-long, snub-nosed, hollow-core device that contained a charge that, when ignited, expelled a powdery substance resembling smoke.

Please see **DEVICES**, Page 9

DEVICES: Warning Given

Continued from Page 1

A device similar to this variety was found last April at John Wayne Airport and caused the runway to be evacuated until it was removed and found to be non-explosive.

The second kind, Condino said, is a practice rocket with a pointed tip that contained no charge. "They were completely inert. They just were dropped from the aircraft and did not explode, ignite, fragment or do anything. They just were dropped."

For years after the target practice, the Santa Margarita Co. used the property only for ranching and farming, and as workers uncovered buried target markers, "they would stockpile them without incident," Condino said.

But in 1984, the company began developing the property. It contacted the Marine Corps and asked it to remove the stockpiled target markers, as well as perform an electronic sweep of the area with a metal detector. The Marines removed 6,000 pounds of the devices before development began, Condino said. During grading for the residential area of the community—several miles northeast of the target area—not a single device was unearthed, she said.

But recently, during construction of a business park—located between the residential section and the target area—target markers were dug up. One was found eight feet deep.

"Because it was not just one, but two, we decided to send a letter to our residents," warning them to be on the lookout, Condino said.

Most of the markers found earlier by the Marines were of the inert variety, but even the ones with the ignitable charge probably were rendered "duds" through rust after being buried and rained on for 40 years, she said.

Nonetheless, the letter asks that, if any target markers are found, residents call the Santa Margarita Co., which will arrange for the Marines to dispose of the devices, she said.

Rocket unearthed at Santa Margarita site

By Lori Doffy
Staff Writer

March 25, 1987
Saddleback Valley News

A military practice mortar, which may have been manufactured during the World War II era, was removed from an industrial building site in Rancho Santa Margarita Monday.

The Explosive Ordnance Disposal Unit from the El Toro Marine Base was dispatched to remove the approximately 18-inch long, 5-inch round rocket.

The device, which was uncovered by construction workers last week near the site of the Hughes building, about a half-mile south of Santa Margarita Parkway, had been sitting on the job site for at least several days, according to workmen.

It had been spray painted orange as a warning to others to keep their distance, said Sam Derting, a building inspector on the site Monday.

Derting, a former military man, said he recognized the round projectile as possibly being explosive, and called the Orange County Sheriff's Hazardous Device Squad because he'd "rather be safe than sorry."

One of the bulldozer operators on the site said the workers have uncovered 10 to 15 of the devices, Derting said.

But according to the Marines and the sheriffs, the device removed Monday is the only one that was reported to them.

During the 1930s and '40s World War II era, the site on Piano Trabuco was an aerial bombing or mortar range used for target practice by the Marines, said Marine Staff Sgt. Dee Simpson.

The rocket that was found contained a small explosive device called a signal cartridge, designed to detonate the release of smoke upon impact. The smoke would then let the "pilot or whomever shot off the device know where it landed," she said.

"It is not safe by any means," she said.

See ROCKET, page A3



ROCKET UNEARTHED— Marines from the El Toro base remove a rocket, which may have been around since World War II, from the Hughes building site in Rancho Santa Margarita. Workmen discovered the "dummy" rocket several days ago.

—News Photo by Mike Korda

Saddleback Valley News

ROCKET:

March 25, 1987

From page A1

she said. "It may not kill you, but it could cause some damage."

The Marines made a sweep of the area in 1984 and cleared away all the devices they could find.

Reports of findings are rare, about two or three since 1984, said Simpson.

"Those guys are probably digging deeper than the the clean-up crews," she said, adding that it is quite possible that the construction workers un some more.

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX I

INTERVIEWS

APPENDIX I

INTERVIEWS

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- I-1 Interview of Mr. Glen Land & Mr. Jim Williams.
- I-2 Interview of Mr. Ronald Ress.
- I-3 Interview of Mr. Louie Roripaugh & Mr. Tony Tobin.
- I-4 Phone Con with Mr. Jim Anelle.
- I-5 Phone Con with Mr. Jim Williams.
- I-6 Phone Con with Orange County Hazardous Device Squad.

Conversation Record/Interview

Date: 3 Mar 93

Time: 1:00PM

Contact: James L. Williams

Title/Organization: Director,
Corporate Relations
Santa Margarita Company

Address: 28811 Ortega Highway
P.O. Box 9
San Juan Capistrano, CA
92693

Phone: (714) 831-6450

Subject: Rancho Santa Margarita (Former Temecula Bombing Range
(Plano Trabuco Target Area)).

Summary:

Ms. Mary Jo Civis and Mrs. Alma Harris met with Mr. Williams at the Rancho Santa Margarita New Homes Center, the site of the former Plano Trabuco Target Area. Accompanying Mr. Williams was Mr. Glen Land, General Superintendent for the Santa Margarita Company. Mr. Land was in charge of operations during the development of the area, and could furnish first-hand knowledge of the site.

Mr. Williams began by expressing concerns as to the need for further investigation of the area. He indicated that his past dealings with the COE (1985-1989) were very frustrating. He elaborated on the situation/occurrences that had taken place, which ultimately aided us in understanding the over-all development of the site.

Mr. Land had brought blue prints of the area/development for us. He and Mr. Williams pointed out areas of current and future development. Mr. Williams noted that, of the 40,000 acre Mission Viejo Area, Rancho Santa Margarita encompasses approximately 5,000 acres. Within this 5,000 acre area lies the 1800 acre subject site. He pointed out the basic location of this 1800 acres, and explained that this portion of land was largely developed now (or in the process of development). When asked what procedures had taken place during development to ensure safety for prospective home owners, Mr. Land indicated that, during excavation, they had sieved the top several feet of soil throughout, and also used a mine detector (magnetometer) to detect any old ordnance. He explained that they had gathered tons of expended ordnance by hand. A large quantity had been taken over and dumped on the far side of Chiquita Canyon (he pointed out approximate location on the map). Mr. Williams then explained that this was the site of the earlier COE remedial project. He then noted that a second quantity of expended ordnance that had been gathered was buried on the southern end of the current development. It was buried in trenches approximately

30 feet deep, under what is now, the eighth hole of the golf course.

Ms. Civis asked Mr. Land if he could point out areas of greatest ordnance concentration on the map. He indicated that the site of the old adobe hut (an historical marker) had the greatest quantities, probably within about a 500' radius. He further indicated approximate areas of average, minimal, and zero concentrations.

Mr. Williams stated that when ordnance was first found in the area, EOD units were called. When the job became too intense for them to keep up, the COE was notified for help (in the mid 80's). He further noted that he had been told by EOD personnel that the rounds were not a serious hazard. Most of the rounds were inert. Those that had a spotting charge (referring to what they term "target markers") had been expended. The EOD personnel also told him that, even if the charges hadn't been expended, they would probably be too deteriorated to go off now. Mr. Williams then stated that, having spent 30 years in the Marine Corps, he concurred with this assertion.

In further discussion of the COE project, Mr. Williams stated that there was an original agreement with the COE to do a sweep of a 100 acre "test area" farther south of the current development (1800 acre) area, currently called Las Flores. This, however, was never funded.

Ms. Civis asked if Mr. Williams had any knowledge of the actual time frame the range was used, and how it got the name "Temecula". He thought it was only used during WWII, but was not really certain. As for the name "Temecula", he had no idea where that came from. He indicated that he's only heard the Army call it that, and noted that, in addition to the MC, the Army Air Corps had also trained there.

Before departing with Mr. Land for a tour of the area, Mr. Williams was asked if he had any confirmed ordnance sitings within the last few years (referring to the developed area). He said that he didn't think so, and showed us the brochure given to all home owners explaining the prior use of the site, pictures of ordnance found, and a 24hr hot line to call, should any possible ordnance item be encountered.

We thanked Mr. Williams for his help and departed with Mr. Land for a tour of the site. During the tour, Mr. Land pointed out all the areas explained earlier. He also took us to the area where current grading is ongoing for future development in the Las Flores area. He noted that, to date, no ordnance items have been discovered in this area.

At the conclusion of our tour, Mr. Land indicated that if we had any questions in the future, just call. We thanked him and departed.

Conversation Record/Interview

Date: 2 Mar 93

Time: 3:30PM

Contact: Ronald G. Ress

Title/Organization: Counsel,
El Toro Marine Corps Air
Station

Address: Cdr, U.S. Marine Corps
Marine Corps Air Station
El Toro (Santa Ana), CA
92709-5001

Phone: (714) 726-3805

Subject: Rancho Santa Margarita (The Former Temecula Bombing
Range (Plano Trabuco Target Area)).

Summary:

Ms. Mary Jo Civis and Mrs. Alma Harris met with Mr. Ress in his office at El Toro Air Base. Mr. Ress expressed concern with the impact of any further investigation at Santa Margarita on the current owners (the O'Neill Family). He felt that in passed dealings with the COE, the owners had been misjudged and put under undo stress in a lengthy, unfinished clean up procedure. He noted that the O'Neill Family was, in his opinion, very concerned about the public safety. Consequently, in the development of the Rancho Santa Margarita Community, they performed various degrees of site remediation, at their own cost, that had not been completed by the COE. He further stated that, if we were interested in an area of "real problems", we should investigate the area formerly used as a part of Camp Pendleton.

After a brief summary of how he had gotten involved with the subject area back in the 1984/85 time frame, Mr. Ress explained the "condemnation" process used by the government in the original taking of the land for the purpose of an aircraft practice target range. He also presented us with copies of real estate documents of the acquisition.

When asked about mapping showing exact perimeters of the target area, he stated that no maps had ever been found. However, he did present mapping showing current flight patterns, and speculated on most probable patterns used during the '40's, when flight patterns were not restricted by such things as "excessive noise" in populated areas.

Mr. Ress explained EOD's involvement in the first pieces of ordnance uncovered at the site. He noted that EOD had indicated that the rounds found were no problem (not hazardous). He explained that he was responsible for recommending that the owners (O'Neill Family) solicit the COE for help when the amount of ordnance being found far exceeded the manpower capabilities of the EOD unit.

Mr. Ress showed us an Environmental Assessment Report of the area that contained specific information/mapping of Plano Trabuco. He allowed us to borrow the report to aid our investigation.

We asked if he knew why the area was called Temecula Bombing Range, when Temecula was so far away. He had no idea! He noted that most people referred to the area as Rancho Santa Margarita, Plano Trabuco, or Trabuco Mesa.

We thanked him for his help and departed.

CONVERSATION RECORD

Date: 4 March 1993

Time: 1300

Contact: Mr. Tony Tobin Title/Organization: Museum
41950 Main Street Curator
Olde Towne Temecula, CA

Mr. Louis Roripaugh Temecula Resident

Phone: (909) 676-0021/675-6329

Subject: Former Plano Trabuco Target Range

Summary:

Mrs. Alma T. Harris and Ms. Mary Jo Civis met with Messrs. Tobin and Roripaugh at the Temecula Museum, in Temecula, CA. During the interview, Mr. Tobin and Mr. Roripaugh both stated that they were unfamiliar with a site known as "Temecula Bombing Range". Mr. Roripaugh said he had lived in Olde Towne Temecula since 1908. He indicated that he had spend many years working on the Vail Ranch which encompassed Riverside County (and Temecula). While he knew nothing of a bombing range in the area, he did note that there were/are unused areas of desert that no one knows much about....

Upon explaining to both gentlemen the location of the site being investigated, we asked if they had any idea (historically) why it might have been called Temecula Bombing Range, when in fact, it was so far away from Temecula. They could offer no explanation.

We thanked them for their time and departed.

Conversation Record

DATE: July, 1993

Phone Conversation Between Ms. Mary Jo Civis and Mr. Jim Annelle,
Safety Representative, CEHND, San Diego
location.

I asked Mr. Annelle if he was responsible for overseeing the contractors during their removal of OEW from Chaquita Canyon, CA. He indicated that he was the safety representative, and he made daily visits throughout the project. I asked him if he had a photograph of the canyon upon completion of the project. He indicated that he had several photographs of the operations, but had never taken one at the conclusion of the project. I told him that I was interested in verifying that the site was completely void of any OEW contamination. Mr. Annelle stated that he could verify that there was no OEW in the canyon upon completion of the project. He noted that his signature on the final paperwork from the project is verification that the project was completed per the SOW.

Conversation Record

DATE: August 11, 1993

Phone Conversation Between Ms. Mary Jo Civis and Mr. Jim Williams, Director - Public Relations, Rancho Santa Margarita.

I contacted Mr. Williams to verify the exact location of the 8th hole of the golf course for siting on aerial photos. Using verbal reference points on the photograph, he was able to verify the location.

During our conversation, Mr. Williams reiterated the rationale for the burial of the OEW at this location. He explained that the government (El Toro EOD) was just not equipped to readily deal with the large quantities of OEW they had recovered. He noted that the decision to bury the ordnance, and where to bury it, was made on the basis of several variables:

(1) We knew we could not just dispose of it. Besides being illegal, it would not be prudent (in terms of safety to the general public).

(2) Current grading activities were ongoing in this area, which is the general area where the OEW was being recovered.

(3) We wanted to choose a location where the possibility of future disturbance (due to construction, etc.) would be limited.

(4) We wanted a location that could be easily documented to survive over time.

(5) We wanted a location that, should anything resurface, could be readily noticed.

Mr. Williams also stated that if the government should ever decide to retrieve the buried OEW, there would be no homes or businesses to contend with. However, he did indicate that the company feels confident that nothing will resurface, and at this point in time, sees no need for intervention.

Conversation Record

Date: 12 October 1993

Conversation between Ms. Mary Jo Civis and the Orange County
Hazardous Device Squad.

Ms. Civis - Have you received any calls in the past few years
to recover ordnance items in the Rancho Santa Margarita
Area?

OCHDS - I received a call about a month ago.

Ms. Civis - Was the call made by the Santa Margarita Company or
by a local citizen?

OCHDS - I couldn't say.

Ms. Civis - Prior to that, when did you received any other calls?

OCHDS - Can't really give you any definate dates, but we do
occasionally get calls from the area.

Ms. Civis - Have you ever retrieved any HE rounds from the area?

OCHDS - Couldn't say.

Ordnance and Explosive Waste
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for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX J

PRESENT SITE PHOTOGRAPHS

APPENDIX J
PRESENT SITE PHOTOGRAPHS

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- J-1 Aerial Photo of Rancho Santa Margarita (1992).
- J-2 Aerial Photo of Rancho Santa Margarita (1992).
- J-3 Aerial Photo of Rancho Santa Margarita (1992).
- J-4 Adobe Hut - Historical Marker/Target Area.
- J-5 Chaquita Ridge.
- J-6 Las Flores Area - Current Grading.
- J-7 Tijeras Creek Golf Course - 8th Hole.



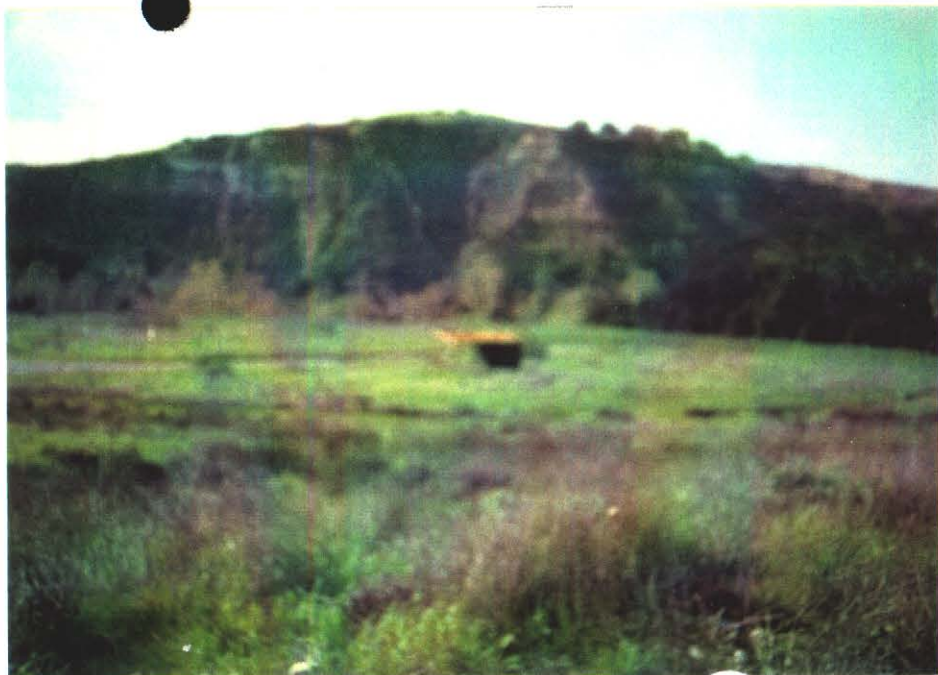
J-1. Aerial Photo of Rancho Santa Margarita Community (1992)
X = 8th hole of golf course; O = Adobe Hut



J-2. Aerial Photo of Rancho Santa Margarita Community (1992)
(See Plate 4)



J-3. Aerial Photo of Rancho Santa Margarita Community (1992)
(See Plate 4)



J-4. Adobe Hut - Historical Marker/Target Area
(see Plates 2 and 4)



J-5. Chaquita Ridge (see Plate 2)



J-6. Las Flores Area - Current Grading (1993)
(see Plate 2)



J-7. Rancho Santa Margarita Community Golf
Course - 8th hole (see Plate 4)

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX K

HISTORICAL PHOTOGRAPHS

APPENDIX K
HISTORICAL PHOTOGRAPHS

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- K-1 Chaquita Canyon Removal Project, 1991 (Ref B-8).
- K-2 Chaquita Canyon Removal Project, 1991 (Ref B-8).
- K-3 Chaquita Canyon Removal Project, 1991 (Ref B-8).
- K-4 Sampling of Ordnance from Chaquita Canyon Removal
Project (Ref B-8).



K-1. Removal Project (1991) of Ordnance Stockpiled in Chaquita Canyon from Plano Trabuco Range (see doc E-4 and Plate 2)



K-2. Removal Project (1991) of Ordnance Stockpiled in Chaquita Canyon from Plano Trabuco Range (see doc E-4 and Plate 2)



K-3. Removal Project (1991) of Ordnance Stockpiled in Chaquita Canyon from Plano Trabuco Range (see doc E-4 and Plate 2)



K-4. Sampling of Ordnance Removed during 1991 Removal Project in Chaquita Canyon (see doc E-4 and Plate 2)

Ordnance and Explosive Waste
Archives Search Report
for
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(Temecula Bombing Range)
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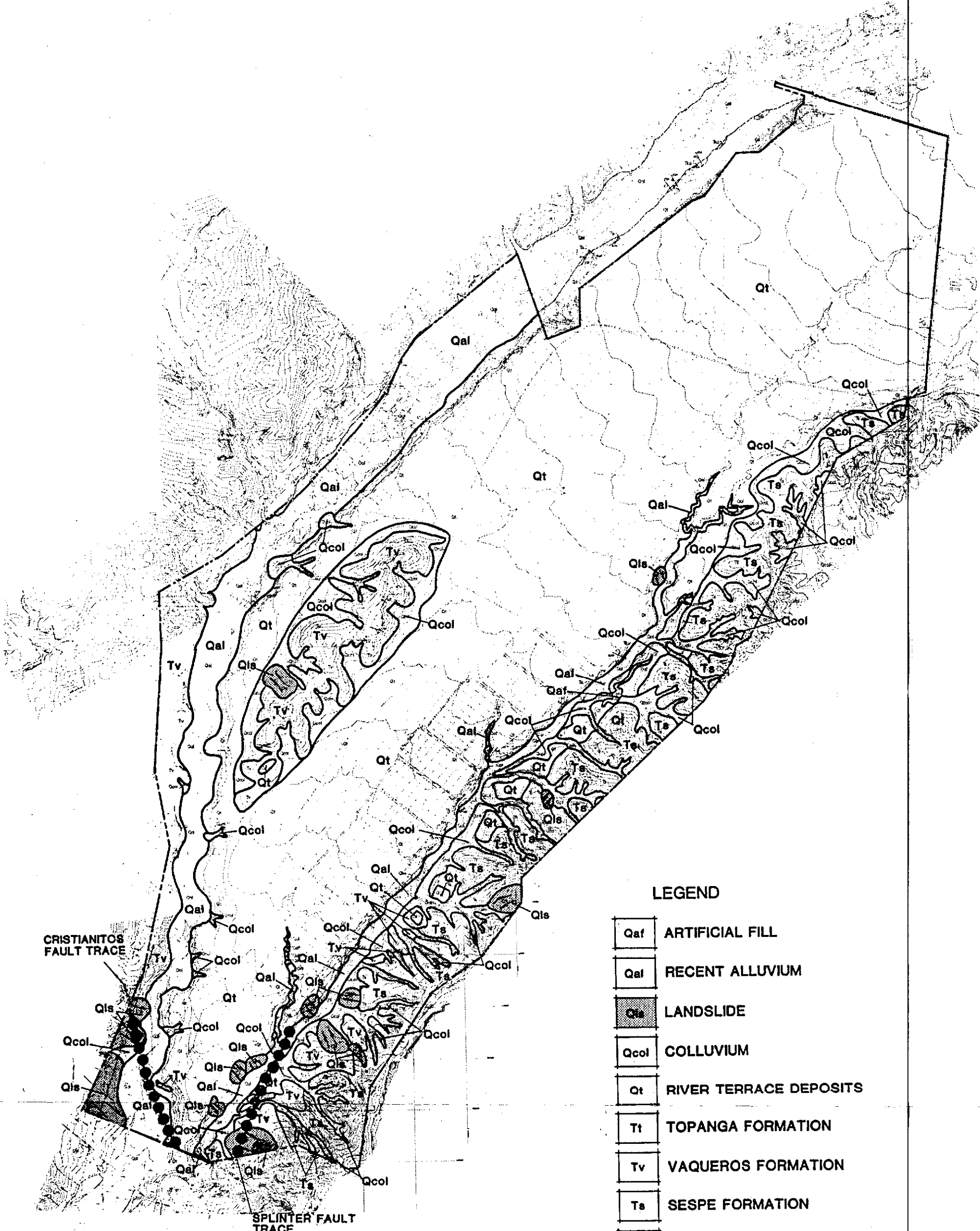
APPENDIX L

HISTORICAL MAPS/DRAWINGS

APPENDIX L
HISTORICAL MAPS/DRAWINGS

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- L-1 Geological Formations (Ref B-2).
- L-2 Fault Lines (Ref B-9).
- L-3 Site Soils (Ref B-2).
- L-4 Vicinity Map (Ref B-16).



LEGEND

- Qaf ARTIFICIAL FILL
- Qal RECENT ALLUVIUM
- Qls LANDSLIDE
- Qcol COLLUVIUM
- Qt RIVER TERRACE DEPOSITS
- Tt TOPANGA FORMATION
- Tv VAQUEROS FORMATION
- Ts SESPE FORMATION
- FAULT (DOTTING INDICATES TRACE IS CONCEALED)

SOURCE: PACIFIC SOILS ENGINEERING, INC.

Geology
PLANO TRABUCO
 County of Orange

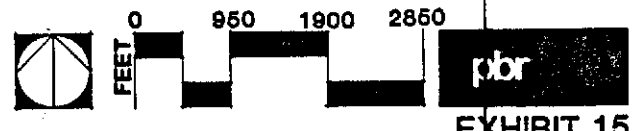
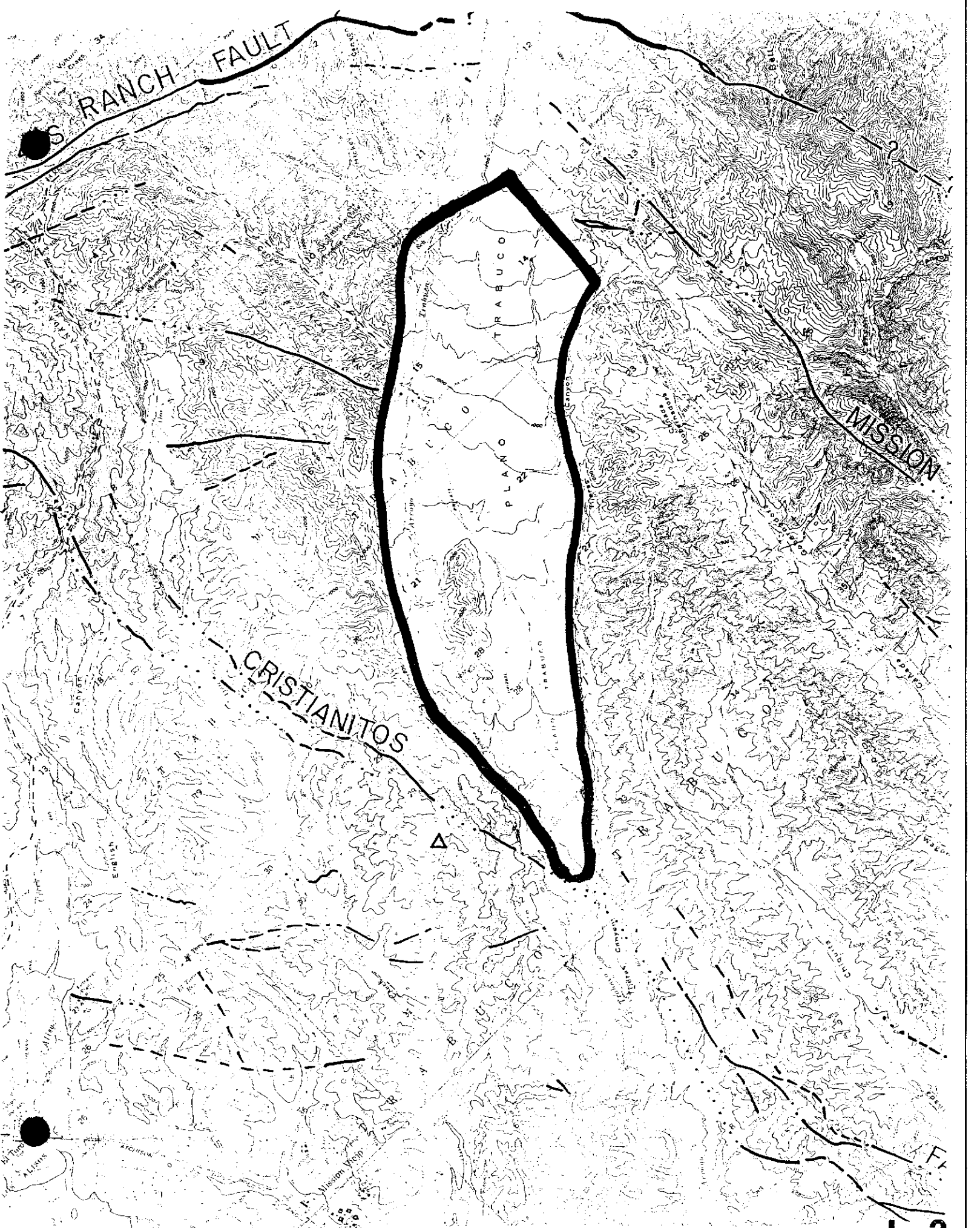
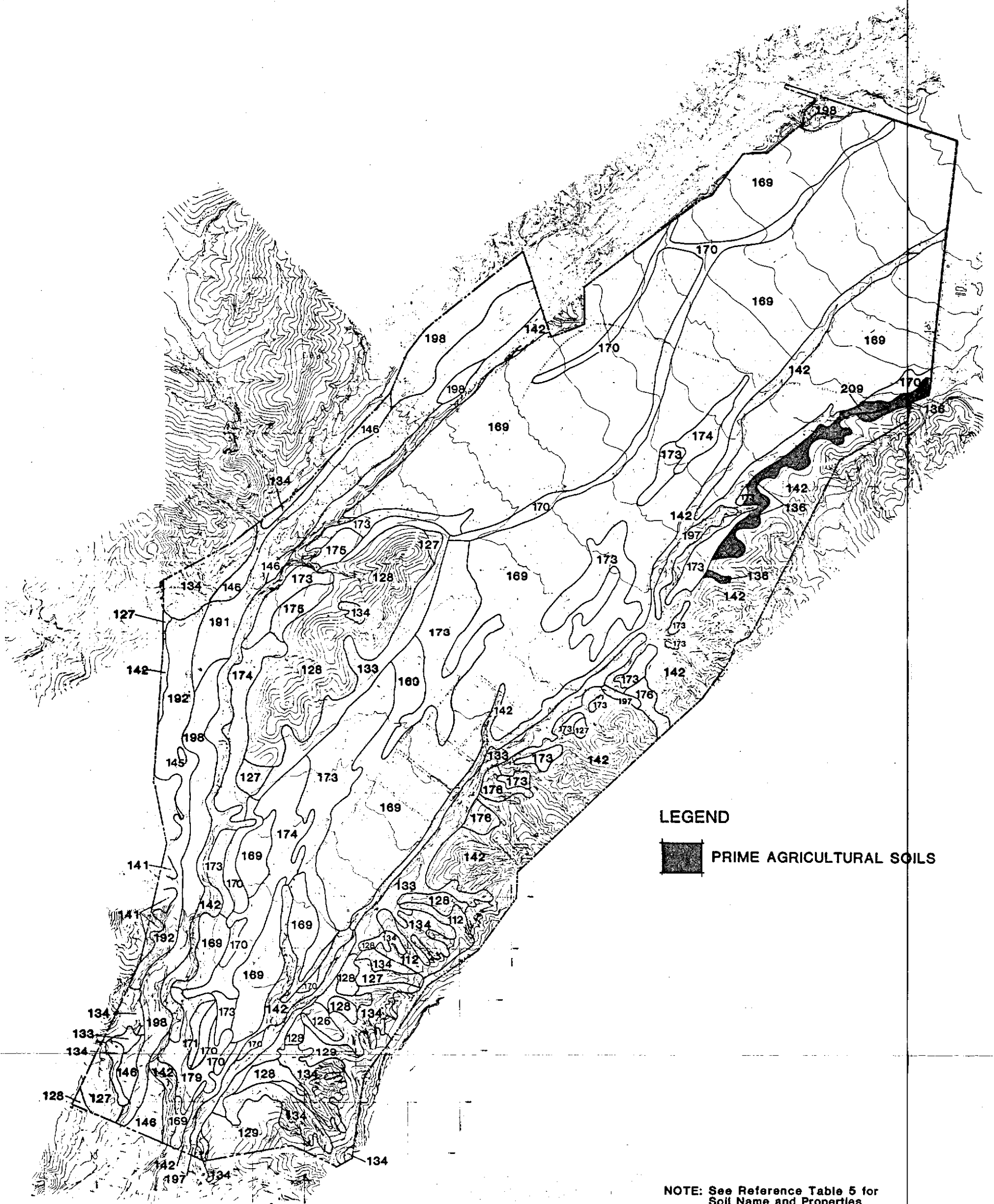


EXHIBIT 15





LEGEND

 PRIME AGRICULTURAL SOILS

NOTE: See Reference Table 5 for Soil Name and Properties

Soils
PLANO TRABUCO
 County of Orange



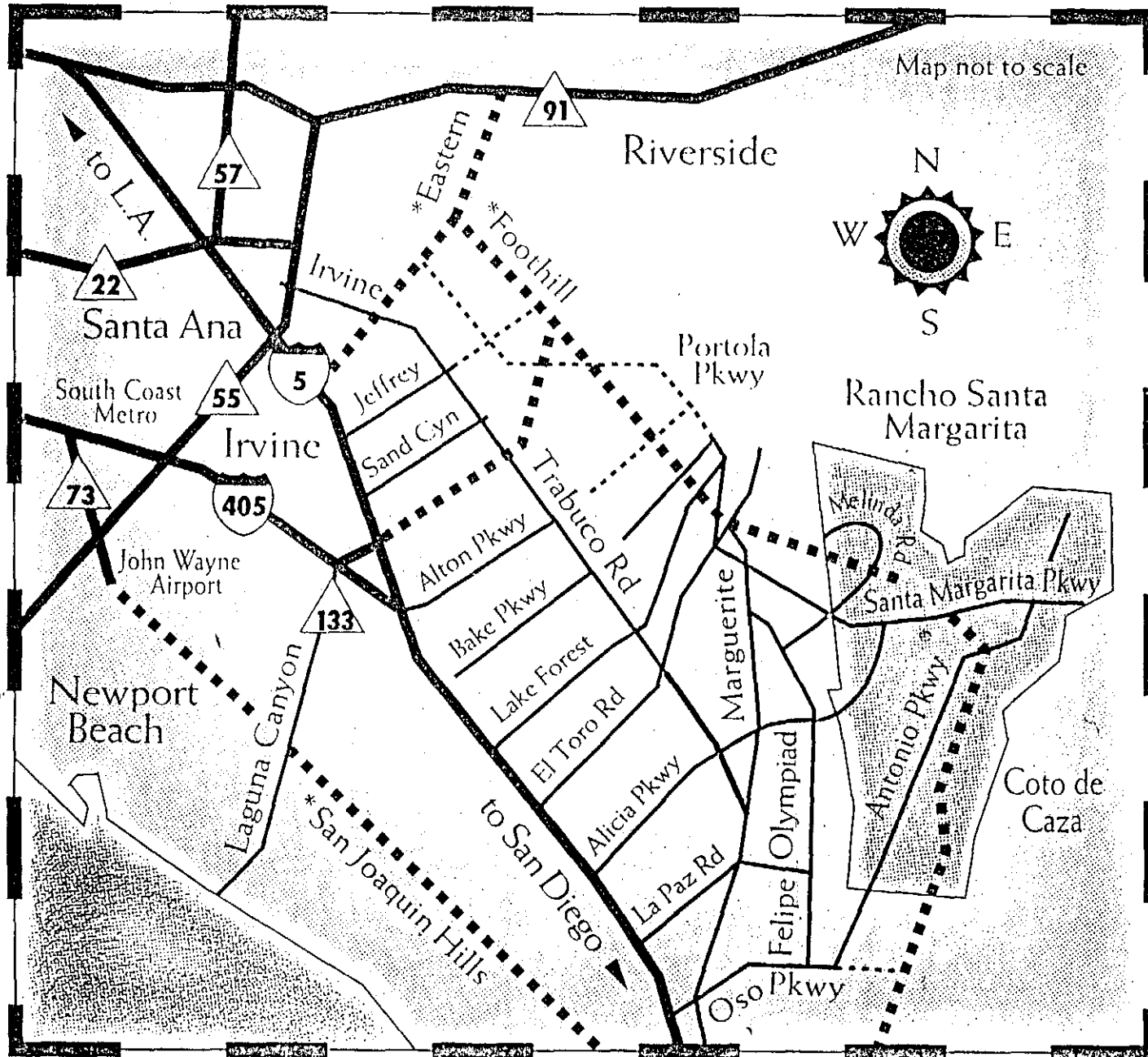
Table 5
SOIL CHARACTERISTICS

Soil Unit	Slopes	Shrink Swell Pot.	Perm.	Storie Index	Runoff	Capab- ility Unit	Erosion Hazard
112 Balcom Clay Loam	15-30%	Mod.	Mod.-Slow	37	Rapid	IVe-1	High
126 Bosanko Clay	15-30%	High	Slow	21	Rapid	IVe-5	Moderate
127 Bosanko Clay	9-15%	High	Slow	28	Med.	IIIe-5	Moderate
128 Bosanko Clay	30-50%	High	Slow	11	Rapid	VIe-1	High
129 Bosanko Balcom Complex	15-30%	High	Slow	29	Rapid	IVe-5	Mod-High
133 Botella Clay Loam	9-15%	Mod.	Mod.-Slow	69	Med.	IIIe-1	Moderate
134 Calleguas Clay Loam	50-75%	Mod.	Mod.	4	Rapid	VIIe-1	High
136 Capistrano Sandy Loam	9-15%	Low	Mod.-Rapid	81	Med.	IVe-1	Moderate
141 Cieneba Sandy Loam	15-30%	Low	Mod.-Rapid	23	Rapid	VIe-1	High
142 Cieneba Sandy Loam	30-75%	Low	Mod.-Rapid	7	Rapid	VIIe-1	High
145 Cieneba Rocky Outcrop Complex	30-75%	Low	Mod.-Rapid	4	Rapid	VIIIs-1	High
146 Corralitos Loamy Sand		Low	Rapid	68	Slow	IIIs-4	Slight
169 Modjeska Gravelly Loam	2-9%	Low	Rapid	58	Slow- Med.	IIIe-4	Slight- Mod.
170 Modjeska Gravelly Loam	9-15%	Low	Mod.	54	Med.	IVe-1	Moderate
171 Modjeska Gravelly Loam	15-30%	Low	Mod.	42	Rapid	IVe-1	High
173 Myford Sandy Loam	2-9%	Low- to High	Very Slow	46	Med.	IVe-3	Moderate
174 Myford Sandy Loam (Eroded)	2-9%	Low- to High	Very Slow	19	Med.	VIe-1	Moderate
175 Myford Sandy Loam	9-15%	Low- to High	Very Slow	35	Med.- Rapid	IVe-3	Mod.-High
176 Myford Sandy Loam	15-30%	Low- to High	Very Slow	27	Rapid	VIe-1	High
179 Myford Sandy Loam (Thick surface)	2-9%	Low-	Very Slow	54	Med.	IIIe-1	Moderate
191 Riverwash	--	--	--	40	Rapid	VIIIw-1	High
192 Rock Outcrop Cieneba Complex	30-75%	Low	Mod.-Rapid	4	Rapid	VIIIs-1	High
197 Soboba Cobbly Loamy Sand	0-5%	Low	Very Rapid	30	Slow- Med.	VIIs-1	Slight- Mod.
198 Soboba Cobbly Loamy Sand	0-15%	Low	Very Rapid	29	Slow- Med.	VIIs-1	Slight- Mod.
209 Sorrento Clay Loam	2-9%	Mod.- Low	Mod.	76	Slow- Med.	IIe-1	Slight- Mod.
224 Yorba Cobbly Sandy Loam	9-30%	Low-Mod.	Slow	28	Rapid	VIIs-1	High

RANCHO SAN TAMARGARITA

...where the west begins. Again.

G-10



VICINITY MAP

Ordnance and Explosive Waste
Archives Search Report
for
Plano Trabuco Target Area
(Temecula Bombing Range)
Orange County, California
Project Number J09CA020901

APPENDIX M

REPORT DISTRIBUTION LIST

APPENDIX M

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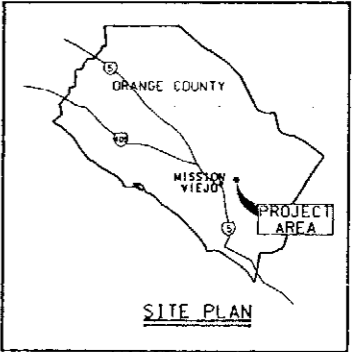
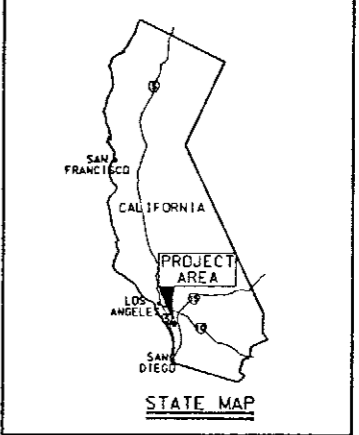
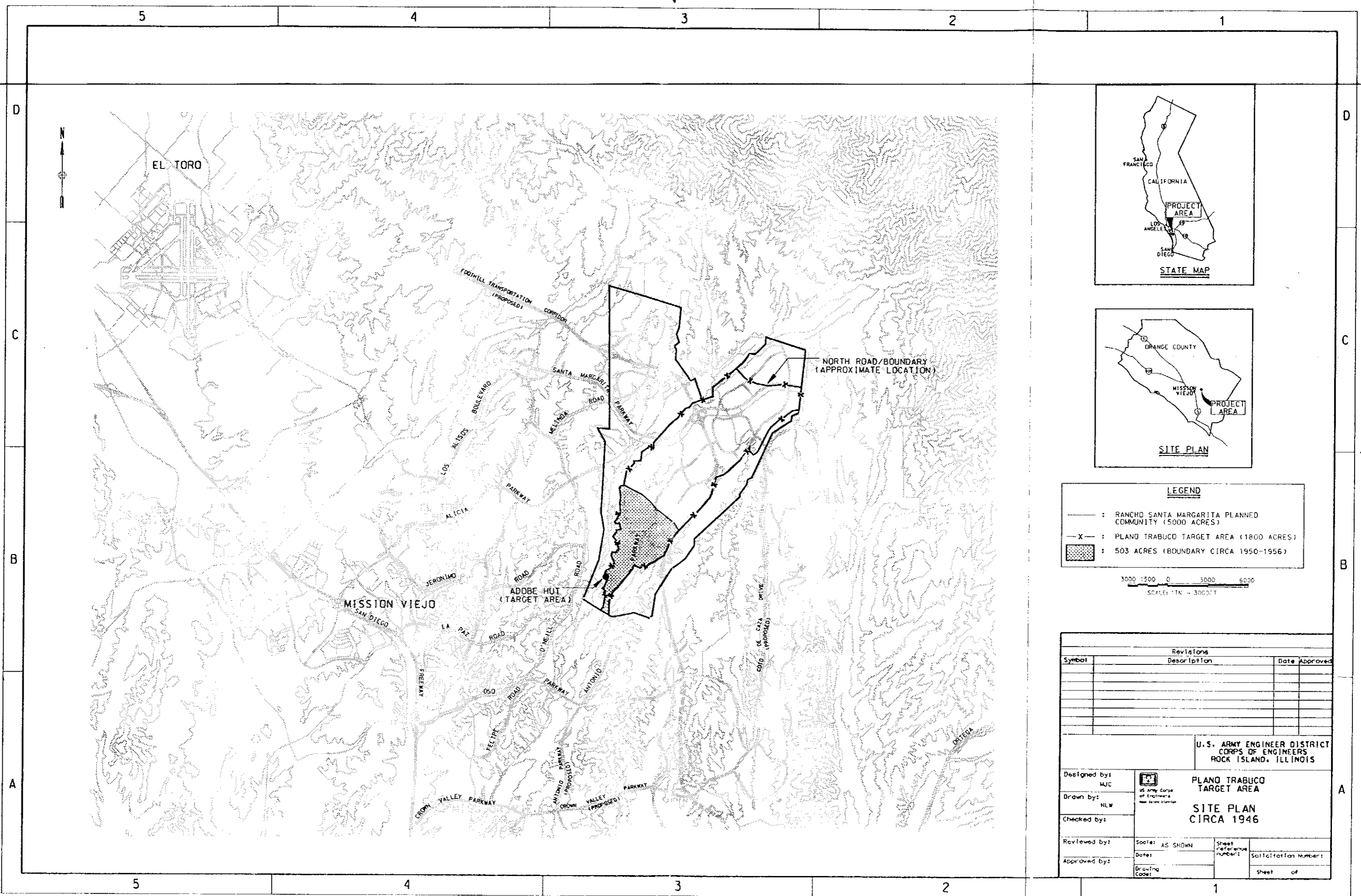
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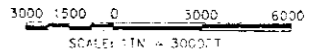
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Orange County, California
Project Number J09CA020901

REPORT PLATES



LEGEND

- : RANCHO SANTA MARGARITA PLANNED COMMUNITY (5000 ACRES)
- X- : PLANO TRABUCO TARGET AREA (1800 ACRES)
- ▨ : 503 ACRES (BOUNDARY CIRCA 1950-1956)



Revisions		
Symbol	Description	Date Approved

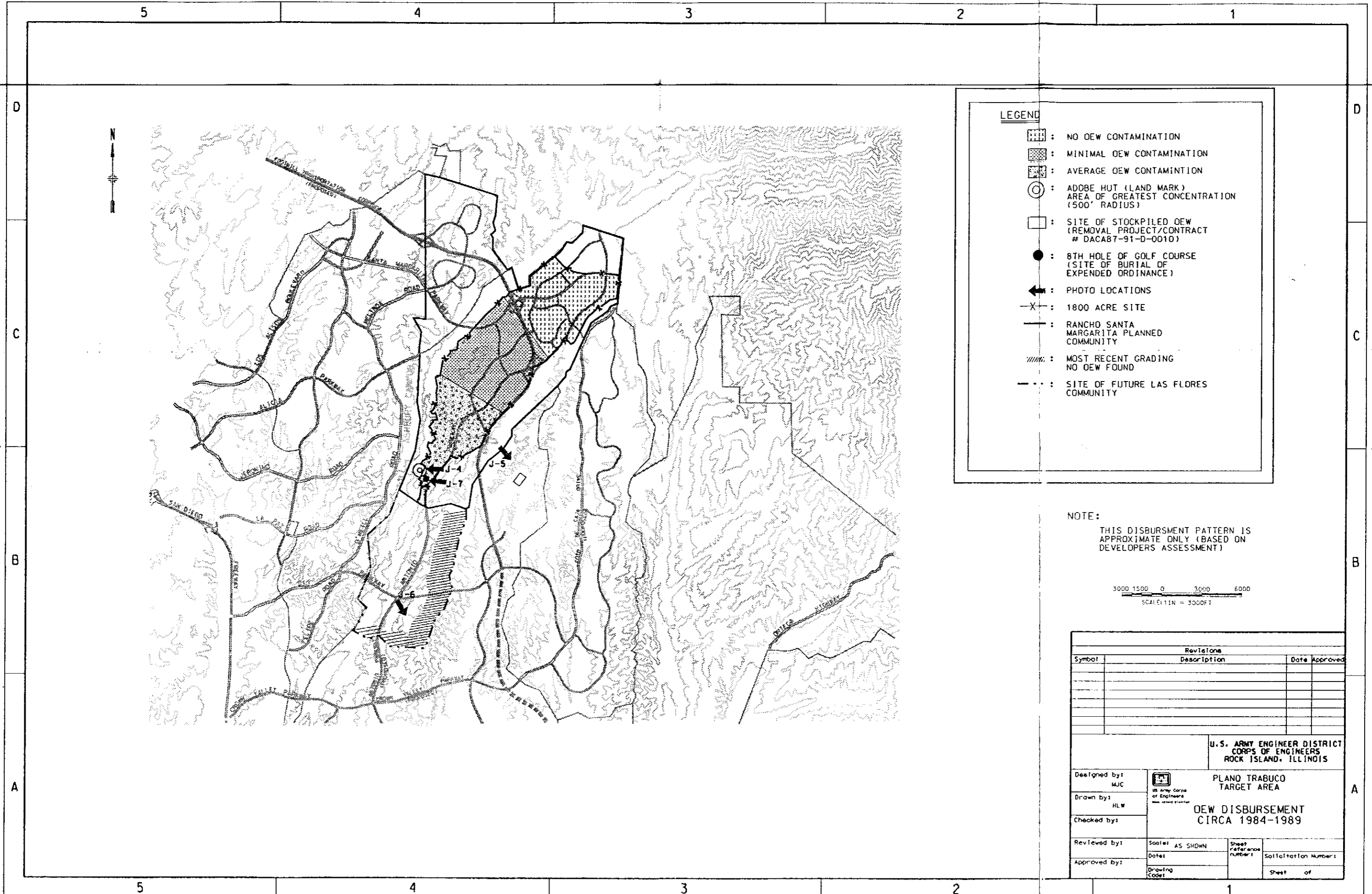
**U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS**

**PLANO TRABUCO
TARGET AREA**












**SITE PLAN
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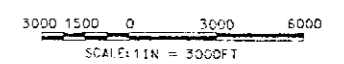
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LEGEND

-  : NO OEW CONTAMINATION
-  : MINIMAL OEW CONTAMINATION
-  : AVERAGE OEW CONTAMINATION
-  : ADOBE HUT (LAND MARK)
AREA OF GREATEST CONCENTRATION
(500' RADIUS)
-  : SITE OF STOCKPILED OEW
(REMOVAL PROJECT/CONTRACT
DAC87-91-D-0010)
-  : 8TH HOLE OF GOLF COURSE
(SITE OF BURIAL OF
EXPENDED ORDNANCE)
-  : PHOTO LOCATIONS
-  : 1800 ACRE SITE
-  : RANCHO SANTA MARGARITA PLANNED COMMUNITY
-  : MOST RECENT GRADING
NO OEW FOUND
-  : SITE OF FUTURE LAS FLORES COMMUNITY

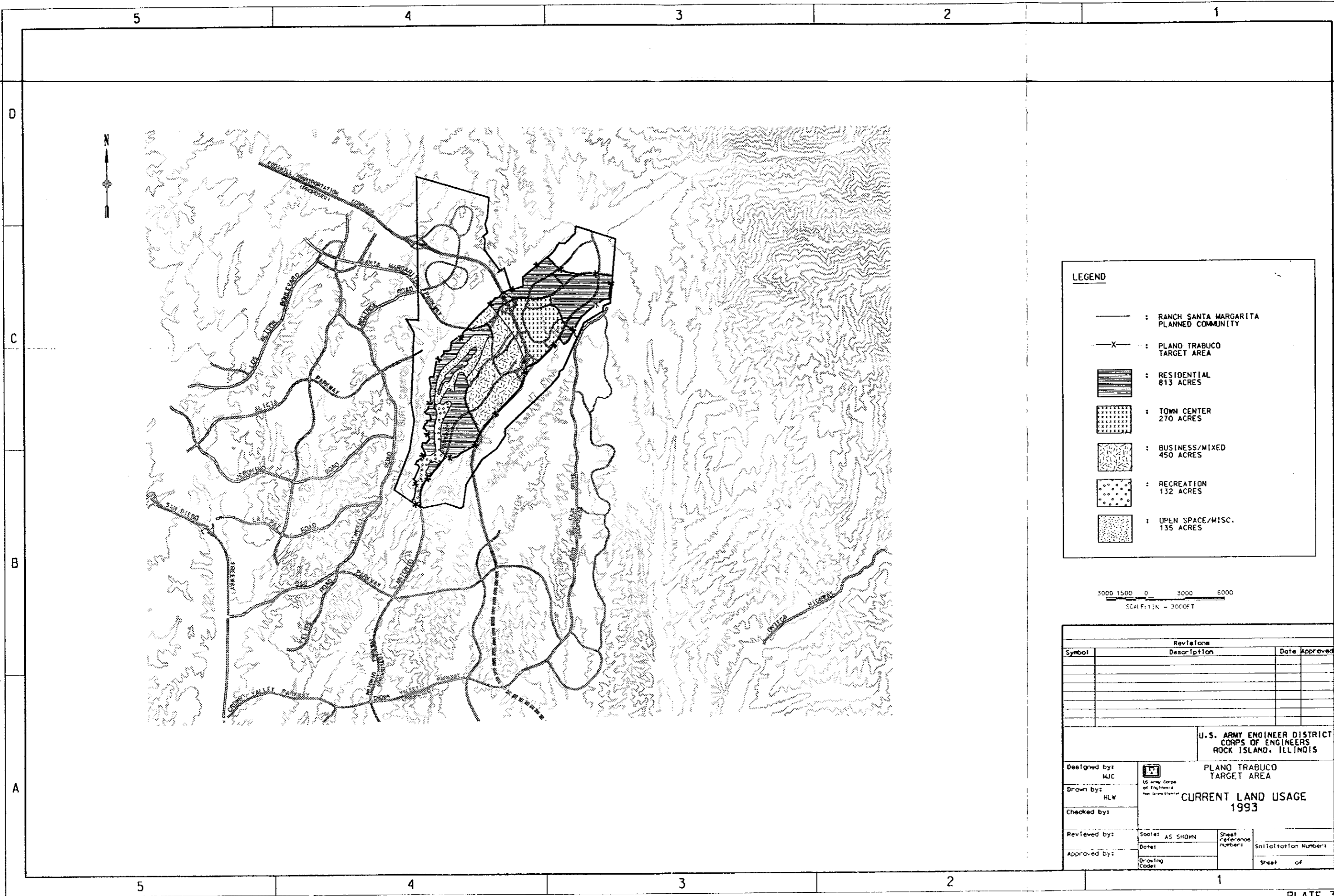
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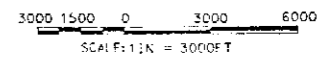
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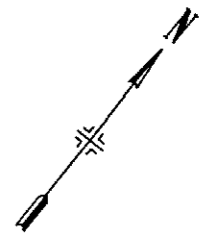
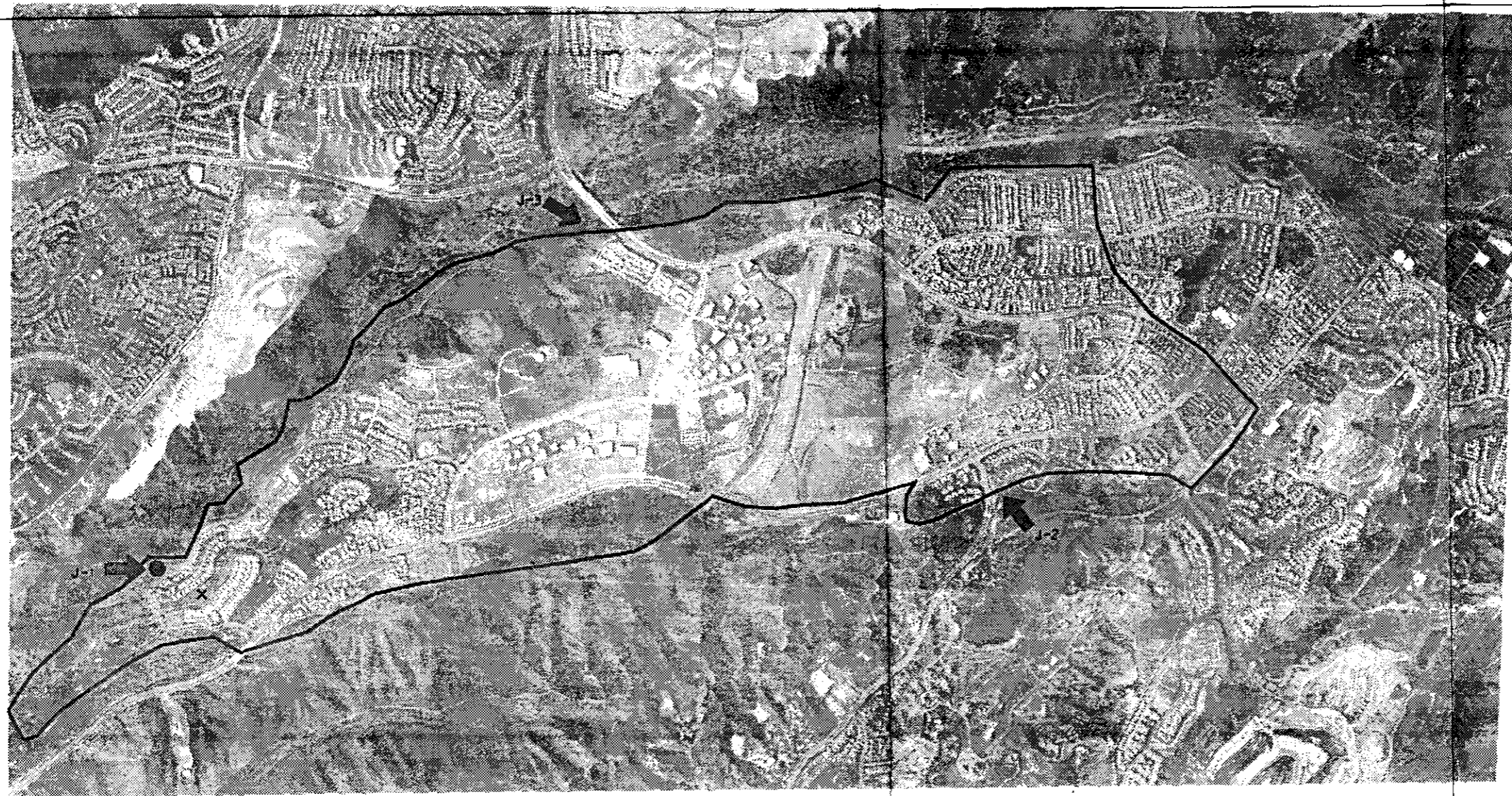
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- : RANCH SANTA MARGARITA PLANNED COMMUNITY
- X- : PLANO TRABUCO TARGET AREA
- [Horizontal lines] : RESIDENTIAL 813 ACRES
- [Grid pattern] : TOWN CENTER 270 ACRES
- [Cross-hatch pattern] : BUSINESS/MIXED 450 ACRES
- [Dotted pattern] : RECREATION 132 ACRES
- [Stippled pattern] : OPEN SPACE/MISC. 135 ACRES



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


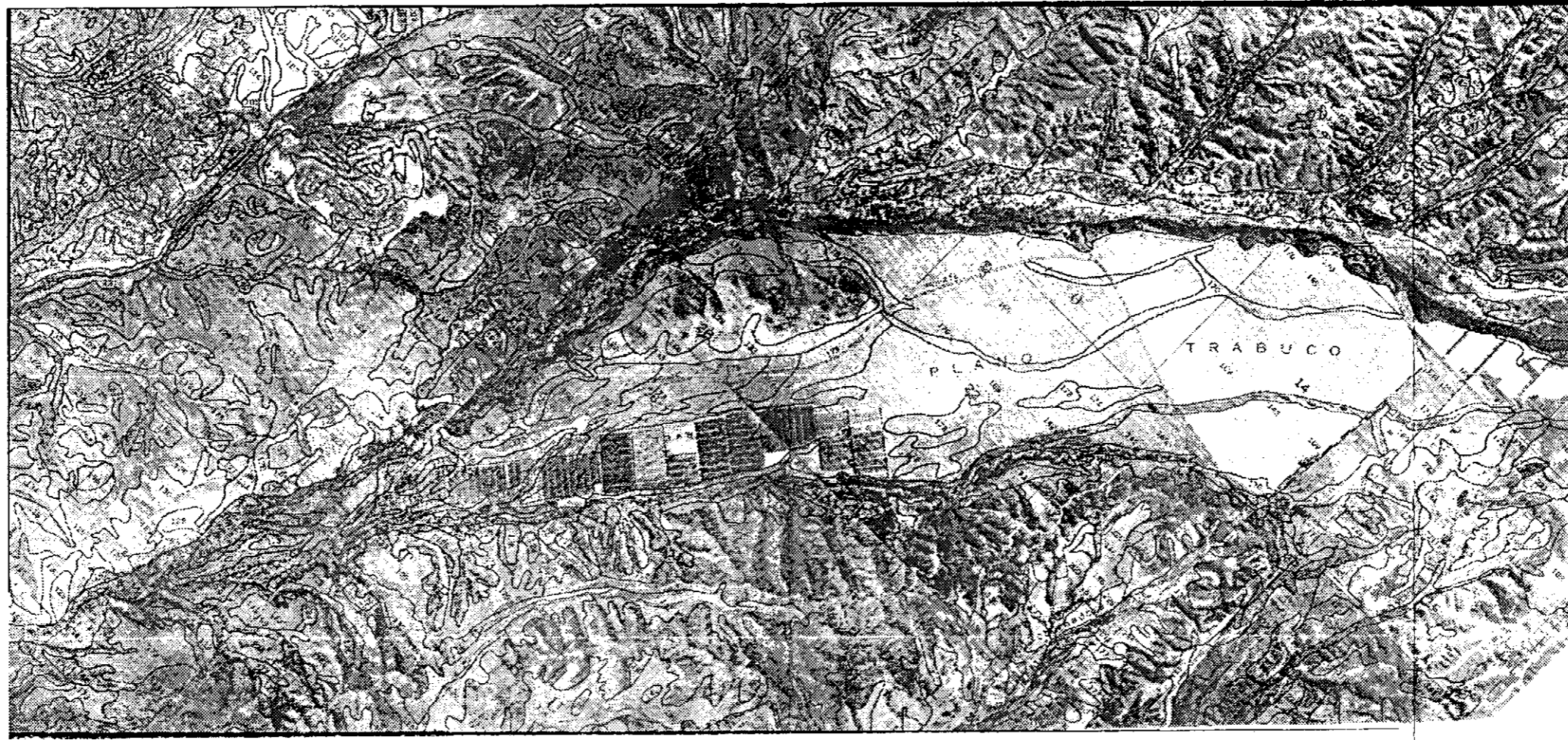
LEGEND	
←	: PHOTO LOCATION
—	: PLANO TRABUCO TARGET AREA
●	: ADDBE HUT
X	: 8TH HOLE OF GULF COURSE

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SCALE: 1" = 1000'

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
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