STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

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STAFF RECOMMENDATION

ON CONSISTENCY DETERMINATION

Consistency Determination No.	**CD-4-00**
Staff:	MPD-SF
File Date:	1/12/2000
45th Day:	2/26/2000
60th Day:	Extended
Commission Meeting:	4/11/2000

FEDERAL AGENCY: **U.S. Navy**

PROJECT LOCATION: Surface Warfare Engineering Facility (SWEF), Naval Construction Battalion Center (NCBC), Port Hueneme, Ventura County (Exhibits 1-5)

PROJECT DESCRIPTION: Establishment of Virtual Test Capability (VTC)

SUBSTANTIVE FILE DOCUMENTS: See page 20.

EXECUTIVE SUMMARY

On September 14, 1999, the Commission objected to the Navy's consistency determination for the development of a Virtual Test Capability at the Surface Warfare Engineering Facility (SWEF), which is part of the Naval Construction Battalion Center (NCBC) in Port Hueneme. Because the Commission and the Navy had entered into informal mediation matter with the Office of Ocean and Coastal Resource Management (OCRM),[1] and because the primary purpose of the mediation was to convene an independent panel of experts to advise the Commission as to the potential coastal zone effects from existing SWEF radar facilities, the Commission believed

[1] Pursuant to federal consistency regulations 15 CFR Part 930, § 930.36 and Subpart G, § 930.110 et seq.

it would be premature to concur with major modifications to the SWEF. Commission concerns included questioning whether the Navy's analyses and radar tests have provided an accurate "worst case" or cumulative impact scenario. At that time the Commission expressed the expectation that the ongoing mediation efforts the Navy agreed to join should provide the necessary issue analysis that had frustrated resolution of these matters.

The expert panel review results are now available and the Navy has resubmitted its consistency determination. OCRM has summarized the panel members' review as follows:

> General Summary - The panel members found that the operation of the SWEF, including its radiofrequency emissions, *in accordance with the Navy's described operational and safety guidelines,* do not, *generally*, pose impacts to any land or water use or natural resource of the coastal zone and do not represent a public health risk. Some of the panel members stated that there may be health or exposure risks to people on vessels transiting or anchoring in the harbor. Most of the panel members recommended steps the Navy can, or should, take to further ensure that the operation of the SWEF is safe, that the Navy's operational and safety guidelines are carefully adhered to and monitored and that radiofrequency measurements in the uncontrolled (off-base) environment are adequate to continue to assess the impact of the radiofrequency emissions. [Emphasis in original]

The panel recommendations are attached as Exhibit 7. The Navy's commitments in response are attached as Appendix A (pages 22-23) . With some changes, the Navy has responded positively to the recommendations. One example of a change is that rather than submit operating logs to a federal agency, annual monitoring reports would be submitted to the Commission. Another change is that, rather than have a "non-DOD RFR measurement expert participate fully in the survey and the writing of the final report submitted to the public," the Navy has agreed to expand on the surveys and their communication to the public, but not to the extent of designating a "non-DOD person" as part of the survey team. Also, the Navy has not agreed to perform a "public exposure assessment study," but rather has chosen to address this recommendation by improving the existing Radhaz surveys, including doubling the measurement points taken in public (uncontrolled) areas, "translating" the survey results into plain English, and appointing an information officer to answer any questions about the surveys. Nevertheless, the Navy's commitments comply with the spirit and intent of the panel recommendations.

Thus, the Navy has adequately responded to the panel members' recommendations and has included commitments that enable the finding that the proposed radar modifications will be operated in a manner consistent with the public access and recreation policies (Sections 30210-30213 and 30220), fishing, boating and shipping (Sections 30234, 30234.5, 30240, 30255, and 30701) and habitat (Sections 30230 and 30240) policies of the Coastal Act. These findings are made with the understanding: (1) that the Navy will continue to test all radar facilities; (2) that the Navy will submit test results to the Commission staff; (3) that the Navy will continue to coordinate radar modifications at the SWEF with the Commission staff, including, where

appropriate, submittal of future consistency or negative determinations for operational or equipment changes at the facility; and (4) that the baseline data sets used by the expert panel will be considered as the baseline for the Commission to rely on in reviewing future changes at the SWEF.

Finally, the Commission wishes to reiterate and underscore what it believes to be two key points raised in the expert panel review: (1) the recommendation for a "well-designed, comprehensive public exposure assessment study" by one panel member; and (2) the use of the more restrictive "FCC guideline" by two panel members. On the first issue, the Commission, *in the strongest possible terms*, urges the Navy to agree to conduct a public exposure assessment study along the lines of that recommended by the panel member, and to use its best efforts to include in the study a "non-DOD" measurement expert on the study and report-writing team. On the second issue, the Commission wishes to express its expectations for future Navy radar surveys. The Commission is therefore advising the Navy that, in keeping with the Navy's commitment to conduct more detailed surveys and to better communicate those results to the Commission, the Commission expects the Navy to measure and report not only any exceedances of the legally applicable "DOD standards," but also any exceedance (for non-federally owned, publicly accessible areas) of the "FCC guideline" cited by two of the members as an appropriate guideline for public areas.

STAFF SUMMARY AND RECOMMENDATION

I. Project Description. The Navy proposes to develop a facility called the Virtual Test Capability (VTC) at the Surface Warfare Engineering Facility (SWEF) Complex, located the on the southwest corner of the Naval Construction Battalion Center (NCBC), adjacent to La Janelle Park and Silver Strand Beach in Port Hueneme. The proposed action would combine the continuation of existing activities at SWEF with: (1) installation of new equipment; and (2) increased operations to develop the VTC.

The VTC would electronically connect Navy facility assets (e.g., laboratories and ranges) with Navy fleet assets (e.g., aircraft and ships). The network that would be established would allow engineers and technicians to integrate the use of Navy systems hardware (radar, directors, and launchers), software (computer programs), and communications devices (satellites and radios). The VTC would allow the SWEF to be interconnected with other military facilities throughout the United States in order to conduct tests that could not be accomplished with the resources of a single facility, and specifically to emulate the assets of a battle group or battle force. The network would allow the "real-time" transference of data between these facilities, thus providing realistic simulations of warfare situations. The SWEF would be the key node of operations for the network and would function essentially like a switching device, channeling information among the different facilities as needed to meet the requirements of a given test.

The VTC would provide the Navy with the capability to test equipment and warfare scenarios using a mix of real, prototype, and simulated equipment. Tests would be conducted in either areal environment (e.g., using Navy ships and aircraft on a test range), test environment (using laboratories), or a completely simulated environment, depending on the requirements of individual operations. Certain tests would use a combination of environments. This capability would allow the Navy to test new equipment without requiring the use of an expensive real test environment unless necessary. It also would allow the Navy to change the mix of equipment that is linked together to provide needed testing, training, or maintenance for configurations that otherwise would be very expensive and time consuming to accomplish using only real assets.

Key elements of the proposed action include:

(1) Additional components of the AEGIS SPY-1A would be installed, including a transmitter, waveguide and antenna. However, the system would be incapable of tracking targets and would not radiate out of the antenna or outside the building. Two additional radar systems are currently in development (the SPQ-9B Phased Array Radar and the Multi-Function Radar) and would be installed and operational in FY 2002 and FY 2004, respectively.

(2) A C4 I satellite transceiver (command, control, communications computer), new C4 I radios and telephones, a Cooperative Engagement Capability (CEC), and a microwave link for local communications capabilities.

(3) Both passive and active optical systems would be installed and would be used for targeting, tracking, and engaging systems to fire weapons. Active systems would use a laser for target designation (detecting and tracking targets) and to measure distance electronically. All lasers would be Class I, eye-safe lasers, comparable to those used by the police for speed checks. The Navy defines Class I lasers as "lasers which by inherent design normally cannot emit radiation levels in excess of the permissible exposure limits."

(4) Existing launcher systems (used for simulating missile launches) would be used for new integration tests, loading training and special fault tests. Modified or improved launcher canisters also would be tested at the launcher site. Two new launchers, a Quad Pack launcher and a Slant Pack launcher, are under development and would be installed at the SWEF when available and/or required. (Note: no actual launches would occur at SWEF.)

(5) A replacement or upgrade of a fiber optic cable may be required to support the VTC network.

In addition to the new facilities, operations currently ongoing at SWEF will increase in three areas: testing, maintenance and training. The Navy's submittal included the following table comparing existing and proposed systems and operations at the SWEF:

Table 1. Comparison of Proposed Project Elements to Current Operations

Element	*Current (FY 99)*	*Proposed Action*
	CAPABILITIES	
Radar Systems	12	3 new
Optical Systems	1	2 new
Communications Systems	6	5 new
Network Systems	2	1 new
Launcher Systems	5	2 new
	ACTIVITIES	
RF Radiation	218 hours per year	42 additional hours per year
Major Maintenance Operations	4 events per year	2 additional events per year
Aircraft Operations	10, 2-4 hours per event	10 additional, 2-4 hours per event
Boat Operations	10, 2-4 hours per events	10 additional, 2- 4 hours per event

Finally, additional information about the proposal can be found in the Navy's recently submitted Draft Environmental Assessment (EA) for the proposed VTC, as well as in the Navy's response to a Commission staff letter asking additional questions about the VTC (see Exhibits 11-12).

II. SWEF/Background. The primary function at the SWEF is to support the continued improvement of warfare, combat, and weapon systems in areas such as reliability, operational capabilities, maintenance, availability, safety, and performance. The SWEF has been in existence since the 1970s and currently consists of 14 buildings and one communications tower (structure 5217) (Exhibits 3-4). About 50 full time (and 25 part time) employees work at the complex. Most buildings serve as engineering laboratories, and Building 1386 is a classroom training facility. Radar/director systems are located on Buildings 5186 and 1384. Building 1384 is the largest and most recent addition to the SWEF complex (Main SWEF Building, Exhibit 3). Construction of Building 1384 began in 1983, equipment installation began in 1985, and the Navy assumed full control of the building in 1986. Today, Building 1384 is an essential element of PHD NSWC's mission and is sometimes referred to simply as the SWEF. It contains a variety of fully operational systems, including sensors and launchers. The site affords clear paths for the installed radar systems to the open ocean and allows line-of-sight flight paths to the building. Building 1384 was designed to simulate the shape of the front of the superstructure of the Navy's most modern cruisers and destroyers in order to replicate conditions experienced at sea, including the elevation at which the radar antennas are placed. It also replicates these ships' phased array capability. ("Phased array" refers to a type of radar antenna that moves electronically and contains no moving parts. Since the antenna does not physically move, it can change directions almost instantaneously and is capable of tracking multiple targets at the same time.)

The SWEF is currently equipped with a variety of combat and weapons systems, including radar, computer and communications systems, as well as laboratory spaces. The equipment and spaces are similar to those found aboard ships. SWEF is used to perform test and evaluation exercises as well as to train personnel to maintain and operate the systems. SWEF provides a cost-effective means of providing realistic, verifiable surface combat and defense systems data to the fleet. As an example of the critical nature of the work that the SWEF performs, virtually all of the combat systems software used on Navy ships is tested at SWEF prior to installation and operation aboard those ships.

III. SWEF/History of Commission Review. In September 1995 the Commission staff expressed concerns over the Navy's 1985 construction of the main SWEF building[2]. That facility was built after federal certification of the CCMP (which triggered the requirement for consistency determinations). Historic documentation available in September 1995 led the staff to conclude that the Navy had been aware prior to its construction that the SWEF facility would affect the coastal zone and would conflict with several policies of the Coastal Act. Because the Commission staff believed the SWEF facility should have undergone federal consistency review prior to its construction, the Commission staff requested that the Navy submit an after-the-fact consistency determination for the facility.

Rather than agree to submit such a consistency determination, the Navy agreed to: (1) submit a "baseline" document describing the SWEF facilities and operations; and (2) coordinate modifications to the facility with the Commission for possible federal consistency review. Modifications to the SWEF to date, prior to the subject proposal, were submitted in the form of negative determinations (ND-26-98[3], ND-52-98[4], and ND-10-99[5]). The Executive Director objected to the first two of these; the third is still pending (the Navy has extended the review period pending completion of the mediation efforts described below). The two objections, dated April 30, 1998, included statements informing the Navy of the Commission's position that consistency determinations would need to be submitted for these activities, and expressing frustration over project-by-project analysis in the absence of an adequate cumulative/baseline analysis establishing safe exposure levels for the overall SWEF radar systems. Concerns were also expressed over the need for definitions of safe separation distances in a manner that would allow a description of maximum or "worst case" emission levels, as well as over possible exposure to shipboard personnel transiting the harbor mouth.

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[2] These concerns were initially raised during the Commission's review of a Navy-submitted negative determination for the establishment of a Special Use Airspace (ND-115-94). The Commission staff originally concurred with the negative determination; however the Commission subsequently determined that changed circumstances led to the conclusion that the activity would affect the coastal zone, and that a consistency determination was therefore necessary. The Navy subsequently withdrew the matter from Commission consideration and did not implement the proposal.

[3] Four Radar Systems: (1) Fire Control System (FCS) MK 99; (2) AN/SPQ-9B Surface Search Radar; (3) AEGIS AN/SPY-1A Antenna Array; and (4) AN/SAY-1 Thermal Imaging Sensor System (TISS)

[4] MK 74 Radar System

[5] MK 78 Mod 1 Director

In response to these objections the Navy maintained its position that the activities described in the two negative determinations would not affect the coastal zone. Based on this continuing disagreement, the Commission and the Navy agreed to an informal mediation process through the Office of Ocean and Coastal Resource Management (OCRM)[6]. Through that process, described in detail in OCRM's report to the Commission (under separate cover – see Exhibit 7 for summary), the parties agreed that technical experts on radar should be consulted to advise the Commission and provide an independent evaluation as to whether the SWEF radar facilities pose a risk to coastal resources.

IV. Status of Local Coastal Program. The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the LCP has been certified by the Commission and incorporated into the CCMP, it can provide guidance in applying Chapter 3 policies in light of local circumstances. If the LCP has not been incorporated into the CCMP, it cannot be used to guide the Commission's decision, but it can be used as background information. The Port Hueneme LCP and Port Hueneme Port Master Plan (PMP) have been incorporated into the CCMP.

V. Federal Agency's Consistency Determination. The Navy has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

VI. Mediation. Sections 930.36 and 930.43 of the federal consistency regulations provide for the availability of mediation in the event of a serious disagreement between a Federal agency and a State agency over either: (1) whether a proposed activity affects the coastal zone (Section 930.36) ; or (2) regarding the consistency of a proposed Federal activity affecting the coastal zone (Section 930.43). In either event, either party may request the Secretarial mediation services provided for in Subpart G, including Section 930.111, which provides:

> *The availability of mediation does not preclude use by the parties of alternative means for resolving their disagreement. In the event a serious disagreement arises, the parties are strongly encouraged to make every effort to resolve the disagreement informally. OCZM [i.e., OCRM] shall be available to assist the parties in these efforts.*

Procedurally, the mediation efforts involving the SWEF that the Navy and the Commission have been engaged in (which are being conducted pursuant to Sections 930.36 and 930.111), is the question of whether six specific radar modifications to the SWEF have the potential to adversely affect the coastal zone. The VTC was not among the modifications specifically reviewed by the expert panel. Nevertheless, the issues reviewed by the panel are inextricably linked to future modifications such as the VTC, which is the reason the Commission previously determined it premature to consider the VTC prior to receiving the expert panel's review.

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[6] Pursuant to federal consistency regulations 15 CFR Part 930, § 930.36 and Subpart G, § 930.110 et seq.

VII. Staff Recommendation. The staff recommends that the Commission adopt the following motion:

MOTION: ***I move that the Commission agree with consistency determination CD-4-00 that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).***

STAFF RECOMMENDATION:

Staff recommends a **YES** vote on the motion. Passage of this motion will result in an agreement with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

RESOLUTION TO AGREE WITH CONSISTENCY DETERMINATION:

The Commission hereby **agrees** with the consistency determination by the Navy, on the grounds that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

VIII. Findings and Declarations:

The Commission finds and declares as follows:

A. Public Access and Recreation. Sections 30210-30212 of the Coastal Act provide for the maximization of public access and recreational opportunities, with certain exceptions for, among other things, military security needs and public safety. Section 30213 provides that "Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided." Section 30220 provides that: "Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses."

The public access and recreation issue raised by radar facilities and operations at the SWEF is whether they have the potential to adversely affect public access and recreation at Silver Strand Beach and La Janelle Park and adjacent jetty, which are located seaward of the facility (Exhibits 1 and 2) and which receive heavy public use for a variety of recreational activities. In addition, the radar operations have the potential to affect water-related activities in the harbor mouth and ocean seaward of the facility, including uses such as recreational boating and fishing, surfing, and swimming.

As it has maintained for its existing radar facilities, the Navy contends that the proposed radar facilities (and other operations involved in the VTC) would not pose any public health risks, and, as has occurred for the existing facilities, that the proposed new facilities would be tested and performed safely in accordance with Navy procedures[7]. The Navy states:

> *Under the proposed action, additional components of the AEGIS SPY-1A antenna would be installed. Two additional radar (the SPQ-9B Phased Array Radar and the Multi-Spec radar) would also be installed at the SWEF complex and used for surface/air tracking exercises. Like the existing antennas, they would be located on rooftops of existing buildings within the SWEF complex and would radiate at an angle that would not impact members of the public, ships, or recreational vessels. Detailed testing would be performed before and after these radar are installed and/or rendered operational in order to ensure that no public safety hazards would result from their use. If the studies indicated a potential hazard to personnel working within the SWEF complex or members of the public, then emitter system characteristics would be modified to ensure a safe operational environment.*
>
> *The ongoing use of these radar systems would be subject to the same intensive safety procedures that are currently in place, further ensuring that no impacts occur. PHD NSWC Instruction3120.1A, "Standard Operating Procedures for Radar Systems, High Power Illuminators, and Launching Systems at the Surface Warfare Engineering Facility Complex," provides requirements and specific guidance for the safe installation and operation of equipment and systems at the SWEF complex. The new radar systems would be subject to these procedures. Key points are as follows:*
>
> *(1) A Subject Matter Expert (SME) would document and establish standard operating procedures (SOP) and approved parameters for system installation, modification, change and/or deviations based on the following studies.*
>
> *(2) A preliminary RF/RADHAZ [Radio Frequency/Radiation Hazard] assessment would be required for the installation of the new radar system components that would render the systems operational. The purpose of the preliminary RADHAZ assessment would be to document and assess the potential risks of the new radar and identify operating parameters. The preliminary assessment would determine what the safe separation distances would be, and at what height above the ground the RADHAZ region would be located. Safe separation distances (RADHAZ zones) would be calculated using permissible exposure limits (PELs) for the controlled and uncontrolled environments per*

[7] Note: Appendix D of the Navy's draft EA provides a detailed explanation of the human health effects in general of RF and EMF Fields, an explanation of the existing standards, and the specific characteristics and schematic diagrams of the SWEF radars. This appendix is attached as Exhibit 19.

DOD Instruction 6055.11. (PELs are based upon the thermal effects of a field, that is, the actual heating of tissue due to the absorption of energy.) For search radar such as those proposed, calculations would include the rotational duty cycle of the radar. Fixed beam calculations without the rotational duty cycle also would be completed for these rotating systems, which would yield a worst-case RADHAZ distance. In the preliminary assessment, the following would be documented:

- *Location of emitter.*
- *Height above the ground or water.*
- *Type of RF emitter (i.e., search radar).*
- *Proposed radiate sectors (true coordinates).*
- *RF emission RADHAZ zones, heights and obstructions (primarily obstructions that may alter the RF transmission, such as other emitters to the side or behind the antenna or building blockage).*
- *Operating parameters, such as average power, estimated system losses, and PELs, that would be used to compute the safe separation distance. The calculation would be based on the lowest frequency of the radar since this would yield the worst-case limit.*
- *RADHAZ distance with height above the ground.*

The preliminary assessment of RF emissions would evaluate propagating beam patterns (i.e., mainlobe, sidelobes) and beam overlap area measurements for evaluating cumulative effects of RF emissions at ground level and adjacent areas near the SWEF complex. The assessment of RF emissions also would include adjacent water areas and the shipping lane (leading in and out of Port Hueneme Harbor), which is approximately 650 feet to 1,000 feet in front of the SWEF complex. The intent of this preliminary assessment is to ensure that during operation no significant levels of RF would be present in areas where the general public may be present. The assessment would show predicted RF levels where the general public may be present as being above, at or below the PELs. This assessment would be conducted with reference to an uncontrolled (public) environment.

(3) After the preliminary assessment and in accordance with OPNAVINST 5100.23, the Radiation Hazard (RADHAZ) survey would be conducted prior to operation. The surveys would establish operating parameters and assign frequencies to ensure that any impact from radio frequency (RF) emissions is confined to SWEF complex boundaries, or is focused in the air at heights (normally 60 feet) that would not affect the public. The RADHAZ surveys would confirm the systems' safe operation for personnel at SWEF (the "controlled environment") as well as the human and natural environment close by (the "uncontrolled environment").

The Navy describes its standards and frequency of testing as follows:

The surveys use RF safety standards that were originally developed by the Institute of Electrical and Electronic Engineers (IEEE) and later approved and adopted by the American National Standards Institute (ANSI) and the Department of Defense (DOD). These standards are composed of two parts. The first set of safety standards is for controlled areas or zones. Controlled areas are locations where people, due to their employment, would expect to have the potential to be exposed to hazardous levels of RF. An example would be the area immediately around SWEF as stated above. Standards for these areas are based on a limit that is 10 times the exposure that might result in potential deleterious biological effects (0.4 watts per kilogram averaged over the whole body). In other words, the exposure that is allowed is 10 times less than that which would cause bodily harm.

The second set of safety standards relates to uncontrolled areas or zones (areas that are accessible to those other than trained personnel, including the general public). An example of the uncontrolled area is the jetty adjacent to the SWEF. The standards for these areas are based upon an exposure limit that is 50 times the level that might be required to produce potentially deleterious biological effects (0.08 watts per kilogram averaged over the whole body), or 50 times less than that which would cause bodily harm. Uncontrolled areas are further divided into two separate areas. The first is an area in which the RF levels are so low that there is no limit to the exposure allowed. The second area, referred to as the RF hazard zone or safe separation distance, is an area that has a defined permissible exposure limit (PEL).

Radiation hazard zones or safe separation distances are calculated based primarily on parameters associated with an individual radar system, including Permissible Exposure Limits (PELs), power, and antenna gain. RADHAZ calculations will vary depending on the absolute numbers used with the calculations and whether the environment is controlled or uncontrolled. In addition, most calculations do not include transmission line losses (loss of transmitter power on the way to the antenna), because they are often unknown and vary from installation to installation. In effect, this makes the calculation even more conservative.

The SWEF will operate all radar associated with the VTC within these parameters. Any further modifications needed to ensure public and personnel health and safety would be made at this time.

The new radar would be resurveyed at set intervals; spot checks are conducted every year. OPNAVINST 5100.23(E), January 1999, requires site certification, which includes a review of each radar every 3 to 5 years. This instruction would also require that any major modification to radar systems be subject to the above outlined installation and operation procedures.

> *Using these procedures and standards will ensure that the installation and operation of additional equipment necessary for the VTC would not create any hazard to beachgoers, boaters, jet skiers, fishermen or any other member of the public, and would therefore not restrict public access.*

During the Commission's previous review of the VTC the BEACON Foundation contended (Exhibit 20) that the Navy's consistency determination and project description lacked sufficient clarity to enable an accurate impact analysis, and that a concurrence at that time would be premature, given: (1) the lack of completion of the mediation/expert panel review of the existing SWEF facilities; and (2) the fact that the Environmental Assessment for the proposed project had not yet been published for public review. The expert panel review is now complete, and the Environmental Assessment for the VTC has been submitted to the Commission staff.

As stated above, the Navy asserts that the existing facilities are operated safely and are regularly tested (and modified, if necessary, to assure their safety[8]). In its previous objection the Commission expressed concerns over whether the Navy's analyses and radar tests have provided an accurate "worst case" or cumulative impact scenario. These concerns were raised because, in past tests and analyses performed by the Navy: (1) not all existing radar equipment had been turned on; (2) some information was withheld due to its being considered "classified"; and (3) certain assumptions about calculations estimating effects on shipboard personnel appeared questionable. At that time the Commission also expressed the expectation that the ongoing mediation efforts the Navy agreed to join should provide the necessary issue analysis that had frustrated resolution of these matters. The Commission found:

> *The [VTC] project would expand the Navy's radar capabilities at the SWEF and electronically integrate the functions at the SWEF with other military missions around the country. This review comes at a time when the Commission and the Navy are currently involved in informal mediation efforts through the Office of Ocean and Coastal Resource Management (OCRM) to determine whether the existing SWEF radar facilities are affecting coastal zone resources. ... The Commission lacks the necessary information at this time to find the activity consistent with the public access and recreation policies (Sections 30210-30213 and 30220), fishing, boating and shipping (Sections 30234, 30234.5, 30240, 30255, and 30701) and habitat (Sections 30230 and 30240) policies of the Coastal Act. ... The Navy should re-submit this consistency determination at such time that the Commission will be able to take into consideration the panel deliberations prior to determining the project's consistency with the ... CCMP.*

The expert panel review results are now available and the Navy has resubmitted its consistency determination. OCRM has summarized the panel members' review as follows:

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[8] See Exhibit 17 for a Navy chart showing past radar study recommendations and corrective actions taken.

> General Summary - The panel members found that the operation of the SWEF, including its radiofrequency emissions, *in accordance with the Navy's described operational and safety guidelines,* do not, generally, pose impacts to any land or water use or natural resource of the coastal zone and do not represent a public health risk. Some of the panel members stated that there may be health or exposure risks to people on vessels transiting or anchoring in the harbor. Most of the panel members recommended steps the Navy can, or should, take to further ensure that the operation of the SWEF is safe, that the Navy's operational and safety guidelines are carefully adhered to and monitored and that radiofrequency measurements in the uncontrolled (off-base) environment are adequate to continue to assess the impact of the radiofrequency emissions. These recommendations are provided after the applicable panel member's summary. [Emphasis in original]

OCRM's more detailed summary of the expert panel members' evaluations and recommendations is attached as Exhibit 7. The recommendations include such measures as taking steps to: (1) avoid ships transiting the harbor with SWEF radars; (2) increase public confidence in Navy radar testing by (a) performing a "well designed public exposure assessment study" within the next six months; (b) designating a microwave safety officer; (c) agreeing to comply with any new updated safety guidelines promulgated by public agencies; and (d) submittal of operational logs to an independent federal agency (such as OCRM) on an annual basis; and (3) use a camera to monitor (and avoid affecting) bird roosting on the roof of the SWEF.

With several changes, the Navy has responded positively to these recommendations (see Appendix A on pp. 21-22). One example of a change is that rather than submit operating logs to a federal agency, annual monitoring reports would be submitted to the Commission. Another change is that, rather than have a "non-DOD RFR measurement expert participate fully in the survey and the writing of the final report submitted to the public" (as recommended by Joe Elder), the Navy has agreed to expand on the surveys and their communication to the public, but not to the extent of designating a "non-DOD person" as part of the survey team. The Navy has also not agreed to perform a "public exposure assessment study," but rather has chosen to address this recommendation by improving the existing Radhaz surveys, including doubling the measurement points taken in public (uncontrolled) areas, "translating" the survey results into plain English, and appointing an information officer to answer any questions about the surveys. Nevertheless, the Commission believes the Navy's commitments comply with the spirit and intent of the panel recommendations, and that the changes the Navy has made do not rise to the level of rendering the SWEF radars inconsistent with the Coastal Act.

The only radar modification proposed for near term installation at the SWEF as part of the VTC would consist of components of the AEGIS SPY-1A (including a transmitter, waveguide and antenna). As the Navy points out, this facility does not have the potential for adverse effects as it would not radiate out of the antenna or outside the building. However, the VTC would also consist of two additional radar systems within the next four years: the

SPQ-9B Phased Array Radar and the Multi-Function Radar, proposed for installation and operation in 2002 and 2004, respectively. These facilities are still in the development stage and their technical parameters are currently unknown. The Navy has agreed to test these facilities prior to operation, and to submit the test results to the Commission for its review. Concerning future testing, the Navy states:

> *There are several different controls to ensure that our RF emission limits are not exceeded. These controls are related to installation design, the modifications to the equipment and restricted access to the facility. At the SWEF complex, whenever a system is being considered for installation, the Navy completes an installation design. The installation drawing includes the projected power level as well as the elevation and bearing restrictions. After the Navy installs the equipment, the Navy conducts an electromagnetic radiation hazard survey to verify that the power level restrictions have been properly implemented. The Navy uses the results of a pre-installation assessment to determine where the systems will be installed, and any limitations on the direction in which the systems will emit radio frequencies. Following radar system installation, the Navy conducts a site survey called a Hazards of Electromagnetic Radiation to Personnel (HERP) to test the radio frequency emission strength and further define acceptable and unacceptable directions to emit radio frequencies. Surveys concentrate on radio frequency emissions that are transmitted into the sky through the antenna located on the roof, as well as emissions inside the equipment spaces in the building.*

Addressing a Commission concern over what future changes or test results would lead to further formal or informal Commission review, the Navy states:

> *The Navy will comply with the Coastal Zone Management Act by submitting negative determinations or consistency determinations as appropriate prior to the installation or modification of a radar system at the SWEF. The determinations will include a description of the equipment being installed or modified including any safety controls or modifications in place and any potential impact on the coastal zone. After the system is installed and the RF hazard report is completed, the Navy will provide the Commission with a copy of the RF hazard report verifying the actual conditions of operation. RF hazard reports can only be conducted after a new system is installed or a modification is installed. The Navy will assign a point of contact to be available to the Commission to address follow-up questions or provide other information.*
>
> *To assist the Commission in reviewing additions to SWEF, the Navy will provide a description of the equipment and provide information explaining where the RF hazard zones exist in relation to the uncontrolled areas including the shipping channel. The Navy will also explain any safety controls or other modifications in place. In addition, the Navy will provide copies of all final RF hazard reports.*

> *The Navy will also perform an analysis of any new radar to determine if the new radar may have a beam that could intersect with other radars within the shipping channel. If the radar has a beam that overlaps with other radars, the Navy will calculate the permissible exposure ratio and make adjustments as necessary. This analysis will become part of the installation design. The Navy will provide the results of this analysis to the Commission.*

Finally, the Commission notes that concerns have been raised over potential public safety issues from proposed additional aircraft activities that would be associated with the VTC (the Navy estimates an 10 additional aircraft "events," with each event taking 2-4 hours). The Navy's project description notes:

> *These operations would continue to be conducted primarily on the Point Mugu Sea Range (Sea Range), which ends 3.5 nautical miles from shore [Exhibit 10]. Flight profiles would continue to be within Federal Aviation Administration (FAA) controlled airspace. Flight profiles, trajectories and flight altitudes would continue to comply with local regulatory restrictions.*

The Navy's draft EA further elaborates on the details of these operations. The draft EA states:

> *This is a minor increase, particularly when compared to over 100,000 commercial commuter flights in and out of the area each year*
>
> *The established safety procedures described in section 3.1 and Appendix C [of the EA][Exhibit 18] would be followed for the proposed operations, as well, thus reducing the potential for impacts. Routine flight profiles would be used that have been flown on the Sea Range for many years. As is currently the case, the proposed flight profiles would not be considered hazardous, and operations would meet all FAA requirements for flight safety. The profiles would be straightforward climbs, descents, and turns. No acrobatic maneuvers would be performed. The Navy would continue to contract with qualified companies with good safety records. No significant safety impacts would result from the small increase in the number of operations that would result from development of the VTC.*

In addition, the Commission staff has requested the FAA to comment on any concerns it might wish to communicate to the Commission over aircraft operations associated with the VTC. The FAA stated (Exhibit 14) that it did "... not have any comments ... " and that the "... Navy's response to ... [the Commission] in their letter of August 16, 1999, [Exhibit 12] is correct and accurate."

In conclusion, the Commission believes that the Navy has adequately responded to the panel members' recommendations and has included commitments that enable the Commission to find that the proposed radar modifications and additions, and other components of the VTC,

will be operated in a manner consistent with the public access and recreation policies (Sections 30210-30213 and 30220) policies of the Coastal Act. These findings are made with the understanding that the Navy will continue to test all radar facilities, submit test results to the Commission staff, and continue to coordinate radar modifications at the SWEF with the Commission staff, including, where appropriate, submittal of future consistency or negative determinations for operational or equipment changes at the facility. For its analysis of future changes the Commission will rely for its baseline description and level of impacts on the "Technical Parameters for SWEF emitters," dated February 18, 2000, which was the baseline relied upon by the expert panel, as well as the "to scale" map submitted by the Navy to the panel dated January 13, 2000 (Exhibits 8 & 9).

Finally, the Commission wishes to reiterate and underscore what it believes to be two key points raised in the expert panel review: (1) the recommendation for a "well-designed, comprehensive public exposure assessment study" by one panel member; and (2) the use of the more restrictive "FCC guideline" by two panel members. On the first issue, the Commission, *in the strongest possible terms*, urges the Navy to agree to conduct a public exposure assessment study along the lines of that recommended by the panel member, and to use its best efforts to include in the study a "non-DOD" measurement expert on the study and report-writing team. If any such study does not include such expert, the Navy should explain the reasons for the non-inclusion. On the second issue, the Commission wishes to express its expectations for future Navy radar surveys. The Commission is therefore advising the Navy that, in keeping with the Navy's commitment to conduct more detailed surveys and to better communicate those results to the Commission, the Commission expects the Navy to measure and report not only any exceedances of the legally applicable "DOD standards," but also any exceedance (for non-federally owned, publicly accessible areas) of the "FCC guideline" (currently 1 mW/ cm^2)[9] cited by two of the members as an appropriate guideline for public areas.

B. Fishing, Boating and Shipping. Several Coastal Act policies provide for the protection of boating and shipping activities. Sections 30234 and 30234.5 of the Coastal Act provide for protection of commercial and recreational fishing. Section 30220 provides that coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses. Section 30255 provides that coastal-dependent developments shall have priority over other developments on or near the shoreline. Section 30701 provides a legislative declaration that the ports of the State of California, which by definition include Port Hueneme, "constitute one of the state's primary economic and coastal resources and are an essential element of the national maritime industry."

[9] From 1.5 GHz - 15 GHz, the DOD/Navy limit increases as a function of frequency [frequency(in MHZ)/1500] from 1 mW/cm^2 at 1.5 GHz to 10 mW/cm^2 at 15 GHz and is 10 mW/cm^2 for frequencies up to 20 GHz. The FCC guideline is 1 mW/cm^2 for the entire range of 1.5 GHz to 20 GHz.

The Navy states concerning boating and shipping activities:

> *The use of surface craft would increase from 10 operations per year to 20, however most activity would take place on weekdays, which would minimize potential conflicts with recreational boaters. Standard navigational procedures would be used to avoid affecting other boats in the area, including visual observation.*
>
> *Commercial shipping traffic shares a portion of the Navy harbor and would continue to have unlimited access. No physical or safety issues would restrict port operations. The VTC would allow vessel traffic transiting the harbor, whether Navy ships or commercial cargo ships, to continue to do so without any restrictions. The Navy routinely coordinates with the Oxnard Harbor District to ensure no impacts to shipping occur.*
>
> *RF emissions would be unable to reach locations where commercial or recreational boats and their crews are present, as described below. Ships cannot get close enough to the SWEF to enter the RF hazard zones (safe separation distances) that are located in the area in front of the SWEF and extend toward the shipping channel that leads in and out of Port Hueneme Harbor. These hazard zones are elevated above the water level (40-95 feet) and point upwards.* [See schematic diagram, Exhibit 6] *The radar that have safe separation distances that extend into the shipping lane emit RF at high elevations only and do not affect even tall ships. Ships are prevented from getting close enough to SWEF to enter the hazard zone because of the draft and length of the ship and the shallow depth of the channel. Port pilots and tugboats are used to guide large ships in and out of the harbor, thus ensuring that they do not inadvertently enter the shallow portions of the channel.*
>
> *An increase of ten (10) 2-4 hour aircraft operations and ten (10) 2-4 hour boat operations associated with use of the VTC would occur over or on the Point Mugu Sea Range. These operations would not require that an area be cleared of recreational or any other users, nor would the operations in any way limit or restrict recreational activities. The VTC would have no impact on recreational uses of area waters, beaches, the Channel Islands, or associated recreational facilities within the Sea Range.*

The Navy also notes that:

> *The VTC is a coastal dependent development. The radar systems must be located on the beach, adjacent to the ocean, at an elevation not exceeding that of a typical combatant ship in order to emulate ship propagation characteristics of radio frequency (RF) emissions, and to allow systems testing in an operationally realistic environment. The location of the VTC at SWEF would accommodate it's [sic] coastal dependent uses, and would not result in significant impacts to coastal resources.*

In its previous objection the Commission expressed concerns over the Navy's assumptions in analyzing safe separation distances and the nearest proximity of ship traffic to the SWEF. The Commission noted that these assumptions were integral to the issues being analyzed in the mediation efforts. Most members of the expert panel expressed concern that there could be potential impacts from ships traversing the channel, and recommended that the Navy take additional steps to avoid radar beams intersecting ships transiting the harbor. The nature of how this could be carried out varied from expert to expert: one felt no measures were necessary, two felt the standard outside the military base should be more restrictive than inside the base (i.e., use the FCC standard of 1 mW/cm^2 rather than the DOD standard, which can be up to 10 times higher, depending on the frequency of the radar (see footnote, p. 16)), and one felt a 2 mile clearance radius should be observed, with posting of Coast Guard Notice to Mariners warning ships not to remain in this zone.

The Navy's response to the panel member's recommendations (see Appendix A) contains commitments to avoid radar beams intersecting ships transiting the harbor, including use of a video camera, designating a "tall vessel exclusion zone," submitting annual monitoring reports including monitoring ship interactions, and designating a safety officer to assure compliance. The Commission believes that these Navy commitments adequately respond to the panel members' recommendations and enable the Commission to find that the proposed radar modifications and additions, and other components of the VTC, will be operated in a manner consistent with Sections 30220, 30234, 30234.5, and 30255, and 30701 of the Coastal Act. These findings are made with the understanding that the Navy will continue to test all radar facilities, submit test results to the Commission staff, and continue to coordinate radar modifications at the SWEF with the Commission staff, including, where appropriate, submittal of future consistency or negative determinations for operational or equipment changes at the facility (and with the same baseline considerations and expectations for future studies and surveys as described on page 16).

C. Marine Resources/Environmentally Sensitive Habitat. Section 30230 of the Coastal Act provides:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30240 provides:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.*

> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.*

The Navy analyzed effects of its radar facilities and additional flight operations on sensitive wildlife species, including: the endangered California brown pelican, which resides in the area and breeds on Anacapa Island; the threatened western snowy plover, which breeds on Ormond Beach and at Point Mugu and may occasionally be found roosting along Silver Strand beach during non-breeding seasons; the endangered California least tern, which breeds at several beaches throughout the Port Hueneme area, including portions of Ormond Beach; and the endangered American peregrine falcon (currently proposed for removal from the endangered species list), which may visit McGrath State Beach at the mouth of the Santa Clara River, about 12 miles north of the SWEF.

The Navy's analysis included potential impacts to birds from noise, bird strikes by test aircraft, air emissions and exposure to radio frequency (RF) emissions. The Navy concluded that: (1) noise impacts from aircraft operations "would be intermittent, infrequent, and of short duration;" (2) that "There is no evidence that the noise levels or the presence of the aircraft would significantly affect the flight behavior;" (3) that "the low number of flights ... is unlikely to cause disturbances that would adversely affect reproductive success"; (4) that "the proposed increase of 10 flights per year would have a negligible impact associated with bird strikes'; and (5) that "There is little scientific evidence to indicate that RF exposure has adverse impacts to birds." The Navy also coordinated its conclusions with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The Fish and Wildlife Service stated (Exhibit 15):

> *We concur that impacts to wildlife are not likely to increase significantly due to the increase in boat and aircraft operations You also provide data which indicate that RF emissions do not pose a threat to wildlife. This conclusion is based upon the distance birds are likely to be from the radar and if exposed, the assumption that duration of exposure will be short. ... The Service does not have any more recent data that Eastwood's "Radar Ornithology" (1967) as cited in your letter. From discussions with ... your staff, it appears that the literature search for papers describing the effects of RF emissions on wildlife has been exhausted. Consequently, the Service concurs with your findings, as the best scientific evidence indicates that there will be no effects on wildlife from the RF emissions, and the additional emissions only amount to approximately seven minutes per day.*

The National Marine Fisheries Service similarly concluded (Exhibit 16):

> *... that the proposed project is not likely to impact any species listed as endangered or threatened under the Endangered Species Act ...[and] not likely to take any marine mammals protected under the Marine Mammal Protection Act ....*

During the Commission's previous review the BEACON Foundation (Exhibit 20) maintained: (1) that the Navy's consistency determination was too vague in its descriptions of the number of flights, aircraft types, and flight times, paths and locations to allow definitive conclusions to be drawn as to the project's impacts; (2) that several avian experts had submitted previous testimony expressing concerns over avian impacts from radar facilities at the SWEF; (3) that Navy air emission impacts conclusions were not substantiated by the data provided; (4) that the Navy was relying on outdated data (more than 30 years old) in concluding that RF emissions would be minimal. Based in part on these concerns the Commission sought to assure there would be wildlife specialist on the previously-discussed expert panel review. The wildlife expert recommended that the Navy install a camera on the roof to verify that birds were not roosting when transmitters are operation. The Navy has agreed to this recommendation (see Appendix A). No other wildlife concerns were expressed by this expert, who concluded that birds on the roof near the transmitters was the only major wildlife concern.

With the inclusion of the Navy's commitment to install a camera on the SWEF roof, monitor bird use, and cease operating until birds in front of any radar can be moved, the Commission concludes that the proposed radar modifications and additions, and other components of the VTC, will be operated in a manner consistent with the habitat and marine resource protection policies (Sections 30230 and 30240) of the Coastal Act. As stated in the previous sections of this report, this finding is made with the understanding that the Navy will continue to test all radar facilities, submit test results to the Commission staff, and continue to coordinate radar modifications at the SWEF with the Commission staff, including, where appropriate, submittal of future consistency or negative determinations for operational or equipment changes at the facility (and with the same baseline considerations and expectations for future studies and surveys as described on page 16).

IX. Substantive File Documents:

1. U.S. Navy Consistency Determination No. CD-75-95, Virtual Test Capability.

2. U.S. Navy Draft Environmental Assessment, Virtual Test Capability, August 1999.

3. Navy SWEF Radar Negative Determinations ND-26-98, ND-52-98, and ND-10-99.

4. Navy Special Use Airspace Negative Determination CD-115-94.

5. OCRM Memo to Technical Panel Members entitled: "Charge to the Technical Panel, Materials and Other Information on the Review of the Navy's Surface Warfare Engineering Facility at Port Hueneme, California," July 19, 1999 (including attachments).

6. "A Report to the California Coastal Commission and the United States Navy on the Coastal Effects of Radar Emissions from the Navy's Surface Warfare Engineering Facility at Port Hueneme, California," Office of Ocean and Coastal Resource Management, March 2000.

X. Exhibits (attached after Appendix A)

1-5. SWEF Complex and existing radars

6. Schematic of radar beam/ship in channel

7. Summary of expert panel members' evaluations from mediation

8. "To scale" map of radar azimuths

9. "Baseline" radar characteristics reviewed by expert panel

10. Military airspace boundaries

11. Commission staff questions to Navy on CD-75-99

12. Navy responses

13. Navy flow chart for internal decisions when installing or modifying radar

14. FAA letter

15. Fish and Wildlife Service letter

16. NMFS letter

17. Navy chart showing past radar study recommendations and corrective actions

18. Draft EA Appendix C – aircraft operations

19. Draft EA Appendix D – RF and EMF supplemental discussion

20. The BEACON Foundation letters on CD-75-99 and CD-4-00

APPENDIX A

Navy Response to Panel Recommendations

The Navy thanks the Panel for their diligent work in support of the informal mediation between the Navy and the CCC. We have reviewed all of the recommendations by the panel members and appreciate the many good ideas for improving the SWEF operations. The Navy shall commit to the following modifications to the operation of SWEF to improve operations of the SWEF and enhance public safety.

INSTALLATION OF VIDEO CAMERA & ELIMINATION OF RADAR EMISSIONS WHEN VESSELS ARE IN THE EXCLUSION ZONE

The Navy will install a video camera system on the roof of SWEF to enable system operators and engineers to monitor large/tall vessels, which require tug assistance, entering or exiting the harbor. An area extending from the harbor entrance buoy (approximately ½ mile from the entrance to the harbor) to the internal channel buoy will be designated a tall vessel exclusion zone (see Attachment (1)). When a vessel is in this 'tall vessel exclusion zone', Navy will not radiate any SWEF radar that has a RF hazard zone that extends beyond the internal Navy fence. All systems' Standard Operating Procedures will be modified to include the monitoring and vessel exclusion procedures. These procedures will be also be used for future radars that may be planned for installation at SWEF.

INSTALLATION OF A VIDEO CAMERA TO MONITOR BIRDS

The video system that will be installed will also be used to spot birds roosting in front of any radar. If a bird is roosting in front of a radar, the Navy will take appropriate action to remove it from the equipment before the system radiates. If a bird roosts during operations, radiation will be stopped until appropriate action is taken to remove the bird. All systems' Standard Operating Procedures will be modified to include the monitoring and bird removal procedures. These procedures will also be used for future radars that may be planned for installation at SWEF

IMPROVEMENTS TO THE RADHAZ SURVEYS

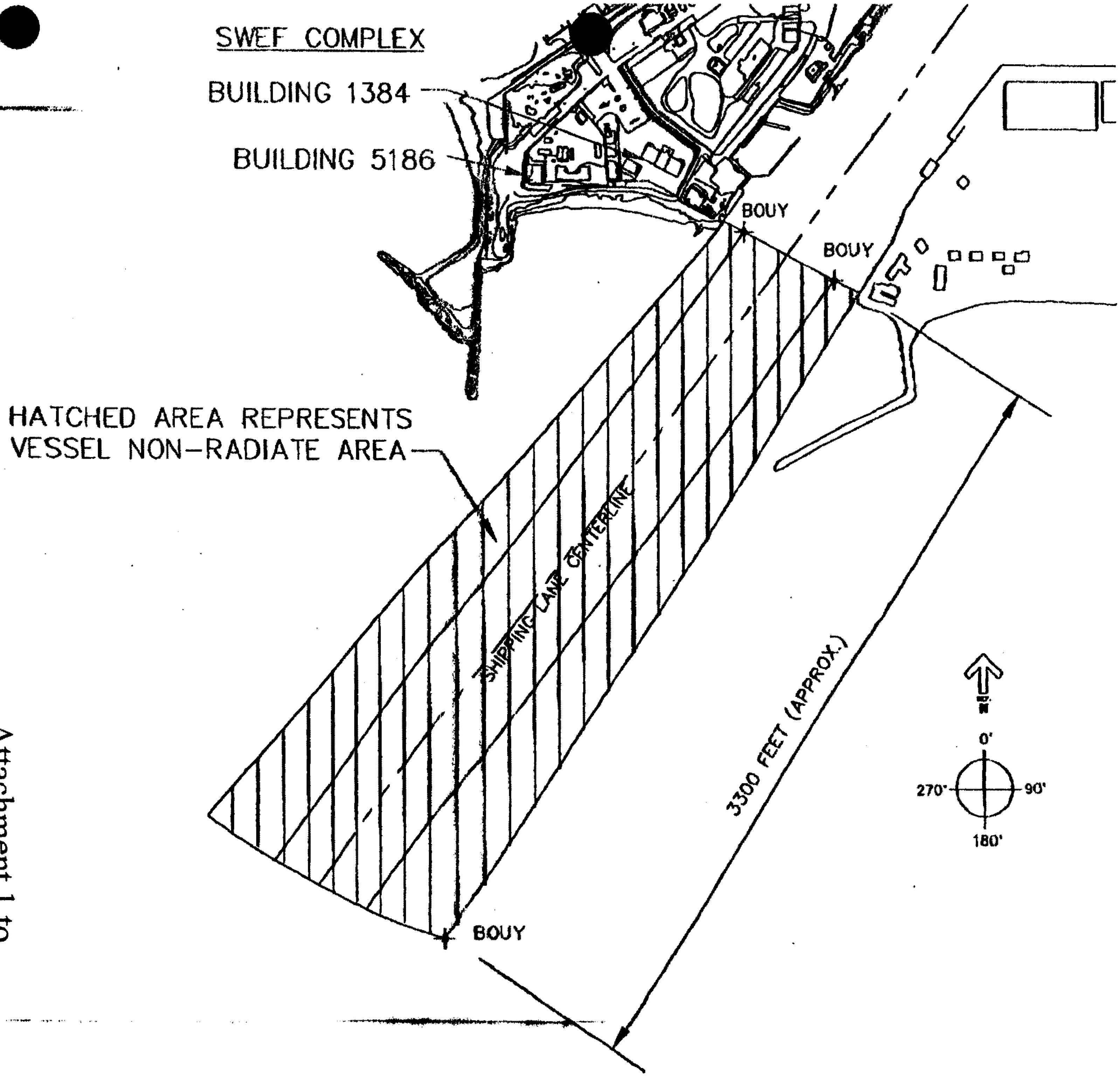
The Navy will, at a minimum, double the number RF measurement points along uncontrolled (off-base) areas in all future RADHAZ surveys. The Navy will specifically indicate the locations of maximum and minimum readings along the fence between the Navy and the public beach in all future RADHAZ surveys. During all future RADHAZ surveys, all SWEF radars capable of simultaneous operation will be energized and oriented (as allowed) toward the measurement points. The measurement equipment used during the test will be described in the report. The Navy will also provide a plain-English Executive Summary to assist the CCC and the public in understanding the technical report. The Navy will identify a POC to answer any questions that CCC may have regarding the survey.

APPOINTMENT OF A RF SAFETY OFFICER
The Navy will designate a RF Safety Officer to ensure continued compliance with required safety measures and regulations.

SUBMISSION OF ANNUAL REPORT TO CCC ON RADAR OPERATIONS
The RF Safety Officer will submit to the CCC an annual report no later than 31 January of each year to include: number of total hours the radars radiated out of the antennas, the number of time radiation was halted due to ships or roosting birds, the number of aircraft events flown off the Sea range, verification that all operational modifications agreed to as a result of this informal mediation are being followed, and verification that the facility continues to be operated in compliance with safety measures

NOTIFICATION & UPDATE ON OPERATIONAL MODIFICATIONS IN RESPONSE TO NEW STANDARDS

To assist the CCC in staying informed about the status of DoD's RF standards, the Navy will notify the CCC when changes are made to the DoD RF standard (DoD Instruction 6055-11). In accordance with the Office of Management and Budget (OMB) circular A119, federal agencies are required to use voluntary consensus standards instead of a government-unique standards unless they are inconsistent with applicable law or otherwise impractical. Therefore, DoD has historically used the RF standards developed by the American National Standard Institute (ANSI) and the Institute of Electrical and Electronic Engineers (IEEE). DoD is also required to comply with all federal regulations. The Navy would comply with any changes to the federal regulations governing RF emission promulgated by the Environmental Protection Agency. Navy will notify the CCC of any new or revised RF standards issued by ASNI/IEEE that DoD decides to use and any changes to applicable federal regulations. The Navy will also provide an explanation of how SWEF operations will be modified to comply with the new standard or regulation.



Attachment 1 to Appendix A

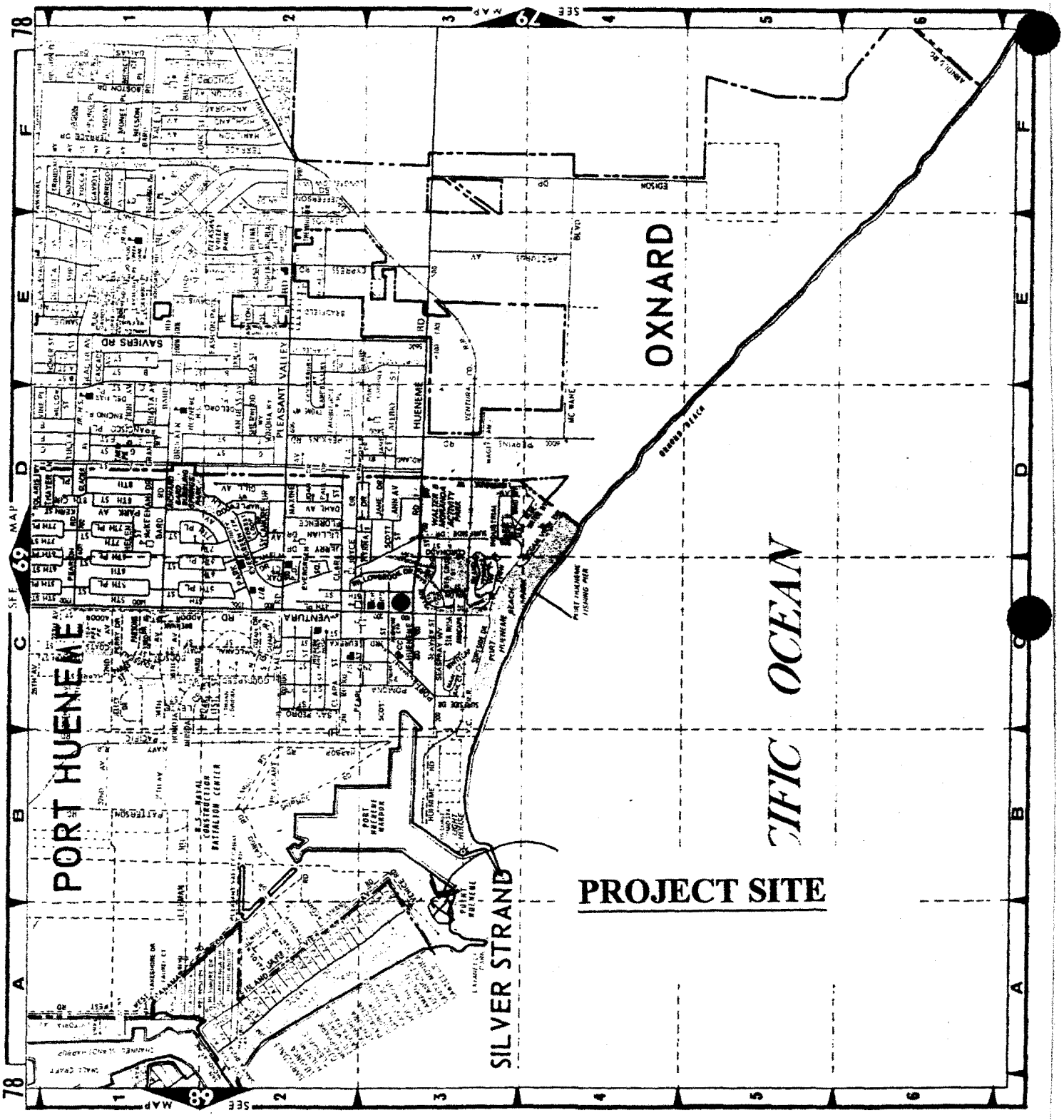


EXHIBIT NO. 1

APPLICATION NO.

CD-4-00

FIGURE 1. THE NAVAL CONSTRUCTION BATTALION CENTER, PORT HUENEME

EXHIBIT NO. 2
APPLICATION NO.
CD-4-00
NAVY-VTC

EXHIBIT NO. 3

APPLICATION NO.

CD-4-00

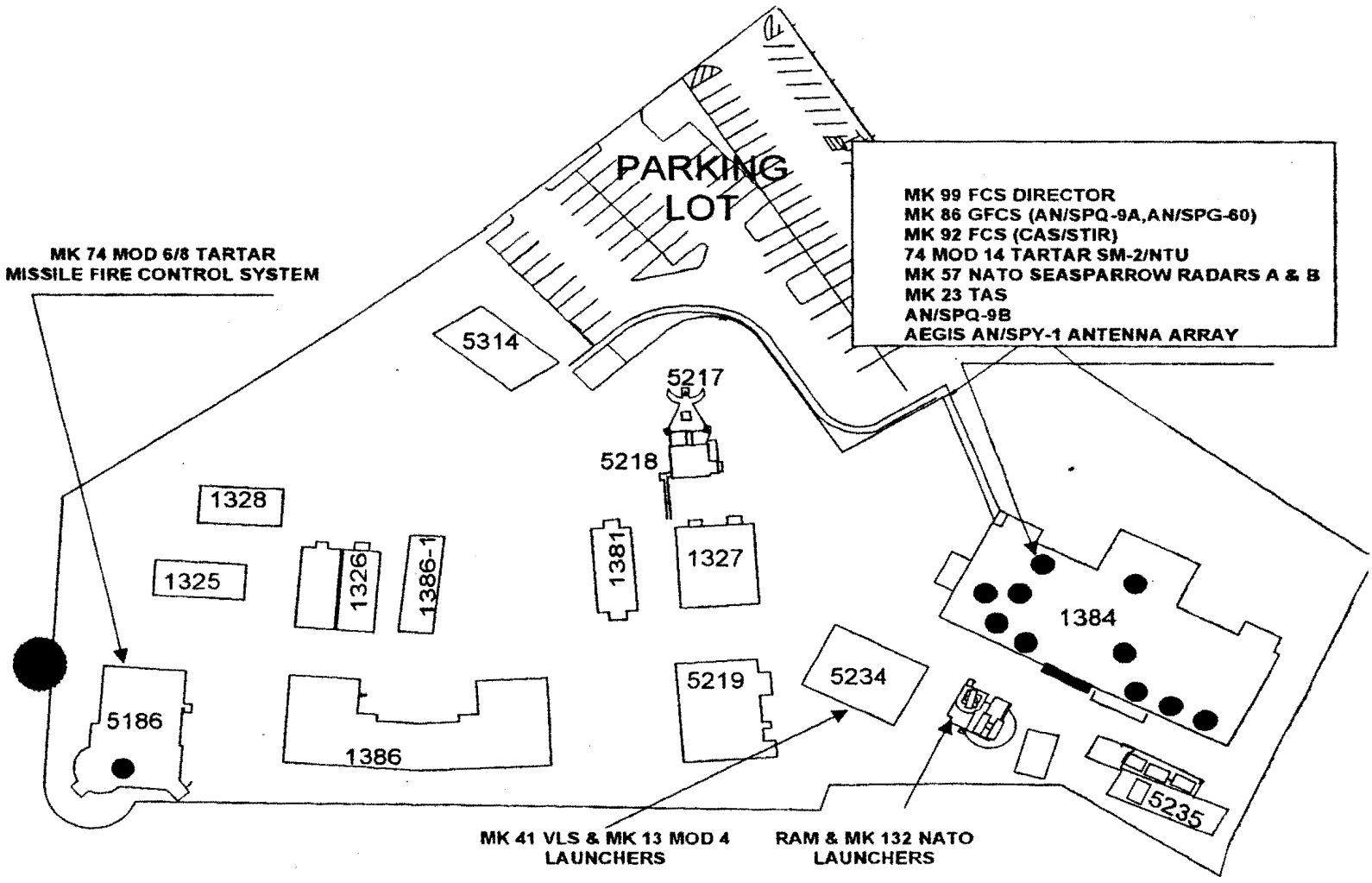


Figure 3-1
Surface Warfare Engineering Facility Complex

EXISTING SWEF BUILDINGS & RADARS

EXHIBIT NO. 4
APPLICATION NO.
CD-4-00

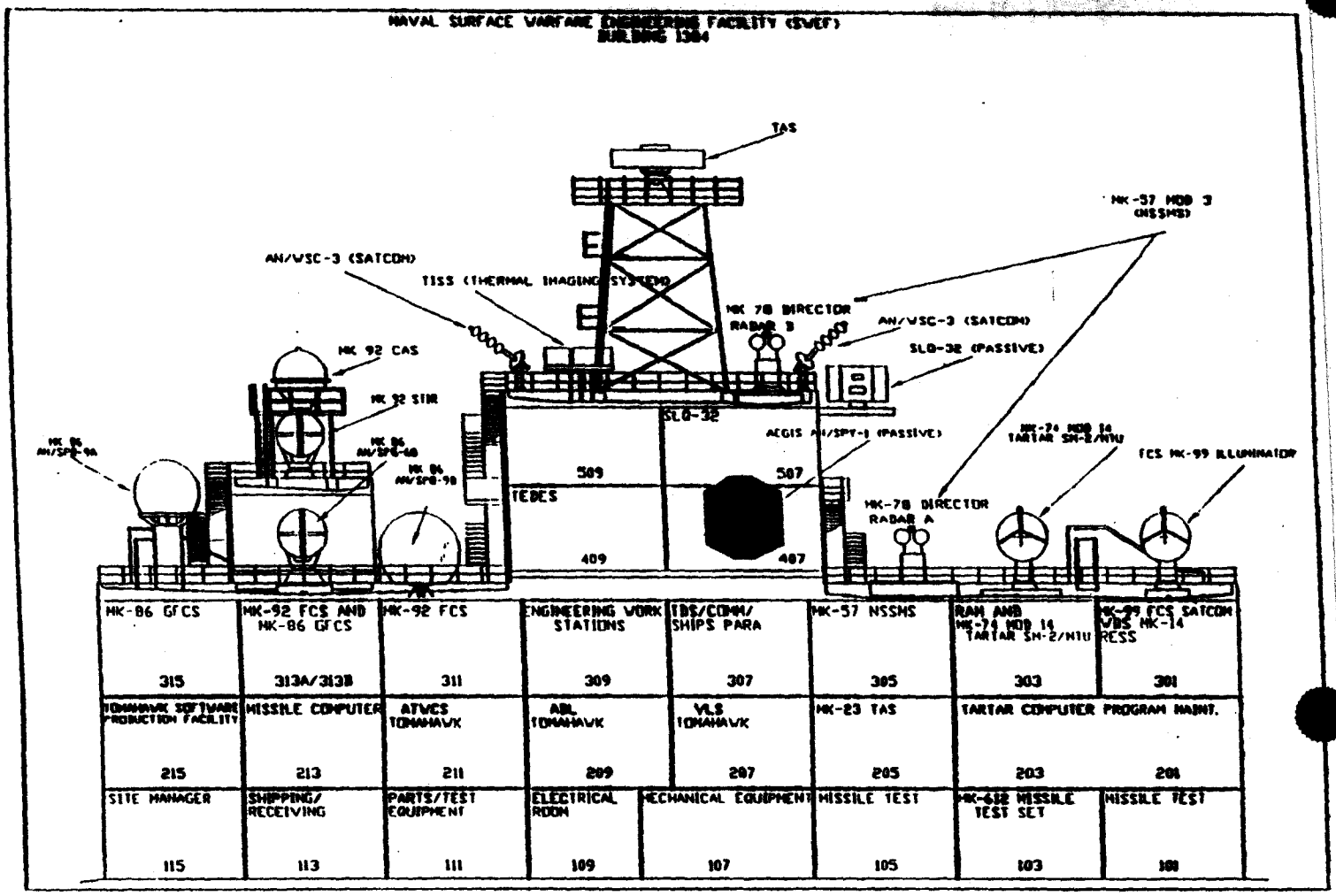


Figure 3-2
Surface Warfare Engineering Facility (Building 1384)

EXISTING SWEF RADARS (Main SWEF Bldg.)

EXHIBIT NO. 5
APPLICATION NO.
CD-4-00

Figure 3.1-1. Example of RF beam position for the MK 99 at the minimum depression angle of 5.0 degrees

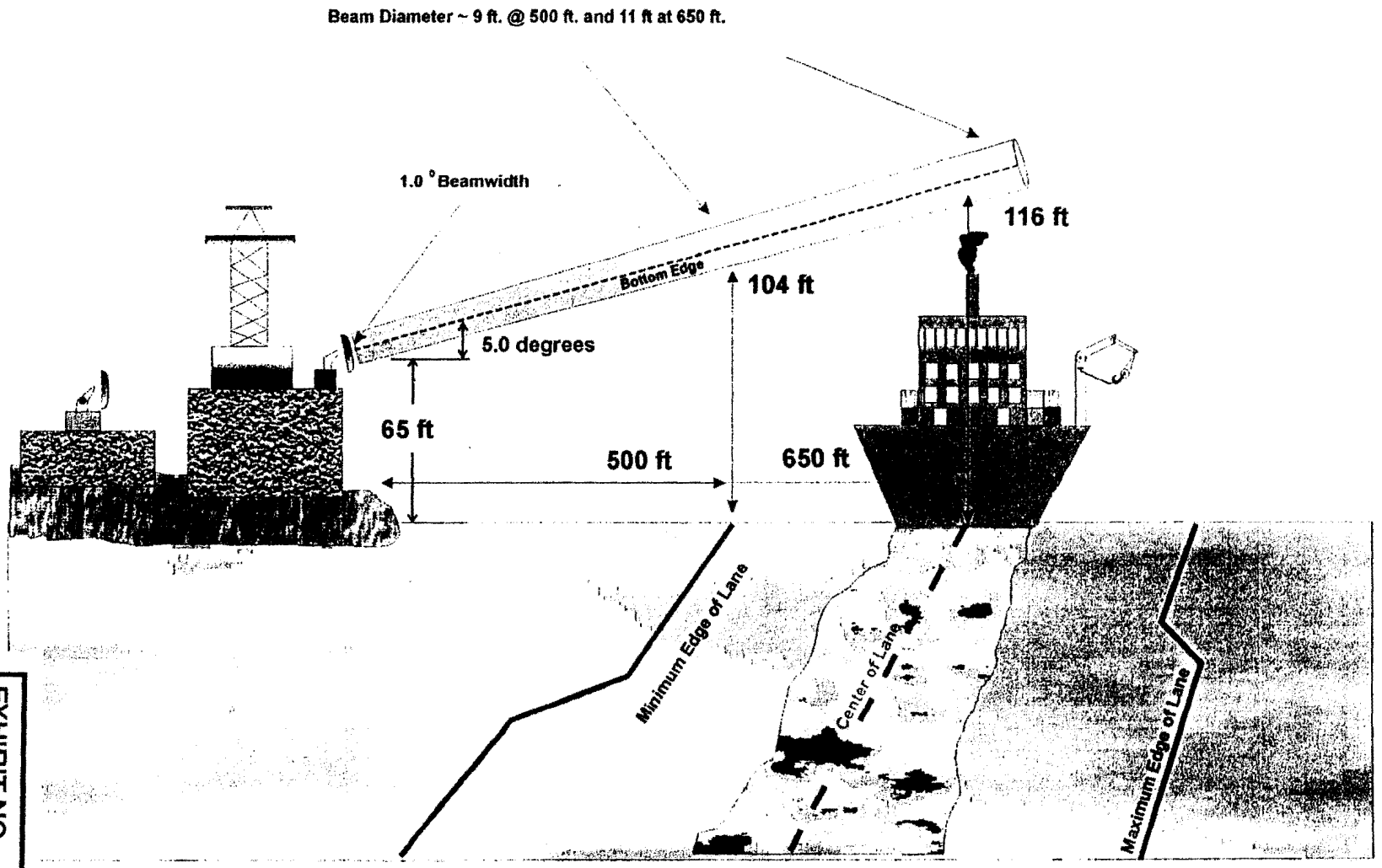


EXHIBIT NO. 6
APPLICATION NO. CD-4-00

Charge to the Panel

The five technical panel members were charged with providing, to the Navy and the Commission, through OCRM, their independent and objective scientific evaluation on whether, and to what extent, the operation of the SWEF poses impacts to any land or water use or natural resource of the coastal zone or impacts safe public access to the coastal zone. To assist the panel members in making their evaluations, OCRM provided materials that were agreed upon by the Commission and the Navy. The panel participated in discussions with the Navy, the Commission, the Citizen Observer, and OCRM on December 14, 1999, in Ventura California. In their participation, the panel members were not representing or working for OCRM, the Navy or the Commission. The panel members are not and were not an advisory or consensus group, but provided their own independent views.

Coastal Effects - Summary of Panel Members' Evaluations

This section summarizes the evaluations by the technical panel, which are included in Appendix 2. A brief general summary is provided, followed by a summary for each of the five panel members. Some of the summaries contain recommendations for consideration by the Navy and the Commission. The summaries and the panel members' evaluations are ordered alphabetically. The length of a particular panel member's summary, relative to the other summaries, is not an indication of importance or weight. All five evaluations, and summaries, should be accorded equal weight.

General Summary - The panel members found that the operation of the SWEF, including its radiofrequency emissions, *in accordance with the Navy's described operational and safety guidelines*, do not, *generally*, pose impacts to any land or water use or natural resource of the coastal zone and do not represent a public health risk. Some of the panel members stated that there may be health or exposure risks to people on vessels transiting or anchoring in the harbor. Most of the panel members recommended steps the Navy can, or should, take to further ensure that the operation of the SWEF is safe, that the Navy's operational and safety guidelines are carefully adhered to and monitored and that radiofrequency measurements in the uncontrolled (off-base) environment are adequate to continue to assess the impact of the radiofrequency emissions. These recommendations are provided after the applicable panel member's summary.

Summary of Each Panel Member's Evaluations

Dr. Ross Adey - Overall, from the data provided to the Panel by the Navy, the SWEF operation is in general compliance with Department of Defense (DoD) Directive 6055.11, with the notable exception that ships entering and leaving Port Hueneme Harbor may be transiently exposed to field levels above the Permissible Exposure Limit (PEL) while under way. They may be more severely exposed if remaining anchored for extended periods at certain sections of the harbor entrance. At least three major considerations affect a determination of potential health risks for Navy personnel in controlled environments and for civilian residents in adjoining housing developments.

1. Available epidemiological studies offer supporting evidence for dose-dependent effects of cumulative microwave exposure over many years.
2. Adverse health effects have been reported with microwave fields at mean incident power

levels below tissue heating thresholds.

3. In the absence of tissue heating as the vehicle for observed adverse microwave bioeffects, further medical microwave research will be necessary to determine the role of peak pulse power and pulse repetition frequencies.

The U.S. Radiofrequency Interagency Working Group (RFIAWG) identified needed changes and updates in microwave safety guidelines. These include: (1) selection of an adverse effect level for chronic exposures not based on tissue heating and considering modulation characteristics, and peak intensities not associated with tissue temperature elevation; (2) recognition of different safety criteria for acute and chronic exposures at athermal levels; (3) recognition of defects of time-averaged dosimetry that does not differentiate between intensity-modulated Radio Frequency (RF) radiation exposure and Carrier-Wave (CW) exposure, and therefore not adequately protecting the public.

Recommendations:

- Complete 360° rotation of any SWEF radar system should no longer be permitted.

- Antenna mobility should be limited to seaward sectoring, with sector margins determined by coordinates of coastline intercepts. Under no circumstances should antenna traverses across adjoining coastal zones be permitted.

- The Navy should issue a general warning to mariners not to remain in a zone extending seaward 2 miles from the SWEF base, with eastern and western margins defined as in recommendation 2, above.

- The Navy should provide, annually, to NOAA, or to a Federal agency designated by NOAA, complete logs of activity in all SWEF radar systems. These reports should include all epochs of operation, the duration of each epoch, and the limits of antenna sectoring.

- DoD should review and implement, in a timely manner, any new safety guidelines developed by RFIAWG in conjunction with the American National Standards Institute (ANSI) for protection of the public.

- Until new Federal safety guidelines now under consideration by RFIAWG are implemented, no blanket approval of the SWEF operation should be affirmed.

Dr. Robert C. Beason - The "bottom line" is that the Navy is operating within the safety guidelines and the SWEF does not present any hazard to civilians in the public areas. The only potential problem would be if an extremely tall ship came into the harbor, but the harbor is probably not capable of handling such a vessel. There is a potential hazard for wildlife, i.e., birds, that might occupy the roof of the buildings while the antennas are emitting a signal. It is possible that the movement of the antennas would flush the birds away.

Recommendation: The Navy might want to mount a camera on the roof of the SWEF or otherwise monitor the roof to verify that birds are not roosting in front of operating transmitters.

Dr. John D'Andrea - Under applicable DoD and National Institute of Electrical and Electronic Engineers (IEEE)/ANSI guidelines, the emissions from the SWEF pose no hazard to people or wildlife that are in the public access area of the coastal zone surrounding the SWEF. The main SWEF beams are restricted to heights well above the public and shipping areas and do not pose a hazard. The small fraction of energy from beam "sidelobes" that may reach the public beaches or waterways are below applicable guidelines and are not a hazard in these areas. The controls proposed by the Navy seem very reasonable.

Recommendations: None.

Dr. Joe A. Elder - The Navy surveys show that public exposures at ground or water levels outside the base perimeter are below 1 mW/cm^2 and I conclude that these surveys show no significant public health risk at these publically accessible locations from exposure to radiofrequency radiation from the SWEF radars. The Navy reports show that a special case of potential public exposure in excess of the general population limit of 1 mW/cm^2 exists on the superstructure of cargo ships in the Port Hueneme ship channel. Safety procedures can ensure safe exposure levels on ships and permit the Navy to fulfill the SWEF mission. Also, the Navy's public exposure data is the minimum necessary to reach these conclusions on the public health impact with my confidence rating of "adequate." Public health evaluations with a higher confidence rating, such as "very good" to "excellent," would enhance the public's reception of the evaluations and be more helpful to public health officials.

Recommendations:

- When cargo ships are stationary in the shipping channel in front of the SWEF, or in front of the SWEF during transit through the channel, safeguards should prevent energization of SWEF radars that produce power densities of 1 mW/cm^2 or greater on cargo ships.

- The Navy should submit to the public [through the Commission] a well-designed, comprehensive public exposure assessment study within a reasonable time, e.g., six months, after submission of OCRM's report to the Commission.

Mr. Edwin Mantiply - If the SWEF follows the engineering and procedural controls as specified in Navy documents, the SWEF should not represent a health risk or affect the offsite environment. It is possible for the SWEF radars to exceed safety limits if used contrary to the Navy's operating guidelines. Thus, the Navy needs to ensure that active radars are not pointed in any direction that causes exposures to exceed safety limits. Procedural controls may be necessary to prevent illumination of transiting ships resulting in exposure to vessel personnel and possibly unacceptable reflections. Engineering controls that would prevent these exposures are apparently impractical.

Recommendations:

- The Navy should designate a microwave safety officer to ensure compliance with safety measures.

- The Navy should provide for simple harbor and channel observation and appropriate operator clearance to transmit.

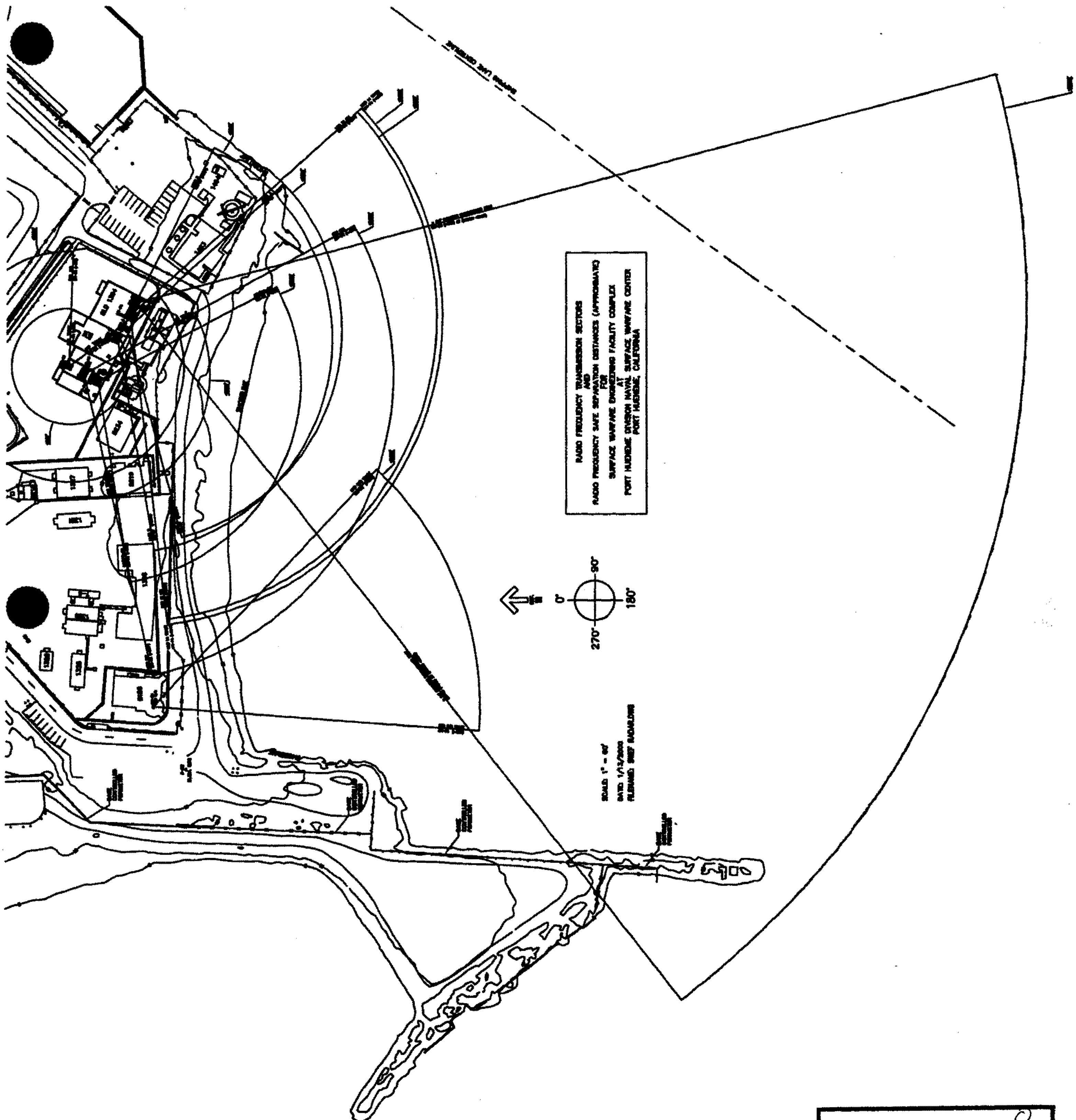


EXHIBIT NO.	8
APPLICATION NO.	
CD-4-02	

Technical parameters for SWEF emitters

18 February 2000

SWEF EMITTER NAME	ANTENNA GAIN (dBi)**	SYSTEM LOSS(GAIN) INCLUDES COUPLING FACTOR LOSS (dB)	APPROXIMATE TRANSMITTER PEAK POWER (WATTS)	POWER USED IN CALCULATION (AVERAGE-WATTS)	RANGE OF TRANSMITTER PULSE REPETATION FREQUENCIES (PULSES PER SECOND)	Antenna Sidelobe Levels (dBc - referenced to mainbeam) Angle from Boresight Elevation	Antenna Sidelobe Levels (dBc - referenced to mainbeam) Angle from Boresight Azimuth	Beam Width (Degrees)	Antenna Dimensions (Feet)	COMMENTS
FCS MK 92 CAS-CWI	35.5	8.73	5000	5000	N/A-CW SYSTEM	Less than -13 $0^{0} \leq \theta \leq 6^{0}$	Less than -13 $0^{0} \leq \theta \leq 6^{0}$	2.4	4 ft-diameter	Sidelobe data from sample antenna pattern
FCS MK 92 CAS-Track	35	4	400,000	400	2210-2770	-20 $0^{0} \leq \theta \leq 10^{0}$	-20 $0^{0} \leq \theta \leq 10^{0}$	2.4	4 ft-diameter	
FCS MK 92 CAS Search	35	3	1,000,000	1000	2210-2770	-18 $0^{0} \leq \theta \leq 30^{0}$	-24 $0^{0} \leq \theta \leq 10^{0}$	1.4-horiz 4.7-vert	5 ft-horiz 3 ft-vert	ROTATING SYSTEM DUTY CYCLE = 0.0039
FCS MK 92 STIR-CWI	42	6.52	5,000	5000	N/A-CW SYSTEM	Less than -15 $0^{0} \leq \theta \leq 6^{0}$	Less than -15 $0^{0} \leq \theta \leq 6^{0}$	1.0-horiz/vert	7 ft-diameter	Sidelobe data from sample antenna pattern
FCS MK 92 STIR-Track	41.5	7	1,000,000	1000	1105-1385	-16 $0^{0} \leq \theta \leq 6^{0}$	-20 $0^{0} \leq \theta \leq 6^{0}$	1.2-horiz/vert	7 ft-diameter	
MK 86 SPG-60	41	2.2	5,500	825	25K – 35K	CLASSIFIED	CLASSIFIED	1.2-horiz/vert	7 ft-diameter	
MK 86 SPQ-9A	37.5	0	1,200	57.6	3K	CLASSIFIED	CLASSIFIED	1.5 horiz 0.75-vert	6.8 ft-horiz 2.7 ft-vert	ROTATING SYSTEM DUTY CYCLE = 0.0042
MK 74 MOD 14 (TARTAR SM2/NTU)-CWI	42.5	1.82	1,500	1500	N/A-CW SYSTEM	***Not spec'd for maximum sidelobes	***Not spec'd for maximum sidelobes	1-horiz/vert	9 ft-diameter	
MK 74 MOD 14 (TARTAR SM2/NTU)-Track	39.6	2.27	50,000*	1600	4.1K Surface 9.5 K– 18.1 K Air	CLASSIFIED	CLASSIFIED	1.6-horiz/vert	9 ft-diameter	
MK 23 TAS	21	0	200,000	5600	636.5 – 749.4	Gain vs Elevation 18.4dBi @ -6^{0} 20.0dBi @ 0^{0} 21.0dBi @ 10^{0}	CLASSIFIED	3.3-horiz -6 to + 75 –vert	2 ft- vert 14 ft-hriz	ROTATING SYSTEM DUTY CYCLE = 0.0092
MK 57 NSSMS Radar A	36.5	0	1,800	1800	N/A-CW SYSTEM	-23 $6^{0} < \theta < 12..0^{0}$	-23 $6^{0} < \theta < 12..0^{0}$	2-horiz/vert	3 ft-diameter	
MK 57 NSSMS Radar B	36.5	0	1,800	1800	N/A-CW SYSTEM	-23 $6^{0} < \theta < 12..0^{0}$	-23 $6^{0} < \theta < 12..0^{0}$	2-horiz/vert	3 ft-diameter	
TARTAR MK 74 MOD 6/8/A/N/SPG-51C-Track	39.5	(1.87)	25,000	550	4.1K Surface 9.5 K– 16.7 K Air	-20 $\theta > 0.8^{0}$	-20 $\theta > 0.8^{0}$	1.6-horiz/vert	9 ft-diameter	

EXHIBIT NO. 9

APPLICATION NO.

CD-4-M

Technical parameters for SWEF emitters

18 February 2000

TARTAR MK 74 MOD 6/8/A/N/SPG-51C-CWI	45	0.68	4,000	4000	N/A-CW SYSTEM	-20 $\theta<2.5^0$	-20 $\theta<2.5^0$	0.8-horiz/vert	9 ft-diameter	
AN/SPQ-9B	43	0	10,000	300	2660 – 35K	-15 $0^0 \leq \theta \leq 2.5^0$	-15 $0^0 \leq 0 \leq 2.5^0$	1.5-horiz 1.0-vert	9 ft-horiz 6.75 ft-vert	ROTATING SYSTEM DUTY CYCLE = 0.0042
FCS MK 99	43	2.48	12,000	12000	N/A-CW SYSTEM	-20 $0^0 < \theta < 6.0^0$	-20 $0^0 < \theta < 6.0^0$	1-horiz/vert	7.9-diameter	

* Peak power is reduced significantly due to an imposed power restriction on this transmitter.
** dBi is antenna gain in decibels referenced to an isotropic radiator
*** Antenna sidelobes are not specifically addressed in specification. Specification for these systems focuses on nulls ('holes') in the spectrum rather than maximum sidelobe levels.
General Note: Peak power is equivalent to average power for continuous wave (CW) systems.
Effective Radiated Power (ERP) is Equal to transmitter output power minus system losses (or plus system gains) x antenna directive gain
Total radiate time for all radar systems in Fiscal Year 98 is approximately 214 hours

Exhibit 9, p. 2

Mainbeam Safe Separation Distances and technical parameters for SWEF radars in Controlled and Uncontrolled Environments

SYSTEM	SAFE SEPARATION DISTANCES	EMISSION SECTORS		FREQUENCY and POWER	
	UNCONTROLLED ENVIRONMENT				
SWEF RADAR NAME Height above Water used in Calculation (ft)	SWEF RADAR (feet)	Approximate bearing (degrees true)	Approximate lower antenna elevation (degrees relative)	FREQUENCY BAND	TRANSMITTER MAXIMUM POWER (AVERAGE)
FCS MK 92 CAS-CWI (95 ft)	<173	142 - 92	0	J-BAND 10-20 GHZ	5000
FCS MK 92 CAS-Track (95 ft)	<87	142 - 92	0	I-BAND 8-10 GHZ	400
FCS MK 92 CAS Search (85 ft)	<1	360	+1.4	I-BAND 8-10 GHZ	1000
FCS MK 92 STIR-CWI (80 ft)	<462	151 - 257	0	J-BAND 10-20 GHZ	5000
FCS MK 92 STIR-Track (80 ft)	<190	151 - 257	0	I-BAND 8-10 GHZ	1000
MK 86 SPG-60 (65 ft)	<303	152 - 261	0	I-BAND 8-10 GHZ	825
MK 86 SPQ-9A (65 ft)	<1	360	0	I-BAND 8-10 GHZ	58
MK 74 MOD 14 (TARTAR SM2/NTU)-CWI (65 ft)	<457	138 - 263	0	J-BAND 10-20 GHZ	1500
MK 74 MOD 14 (TARTAR SM2/NTU)-Track (65 ft)	<465	138 - 263	0	G-BAND 5-6 GHZ	1600
MK 23 TAS (117 ft)	<2.5	117 - 269	0	D-BAND 1-2 GHZ	5600
MK 57 NSSMS Radar A (65 ft)	<321	137 - 255	0	J-BAND 10-20 GHZ	1800
MK 57 NSSMS Radar B (95 ft)	<321	117 - 260	0	J-BAND 10-20 GHZ	1800
TARTAR MK 74 MOD 6/8/A/N/SPG-51C-Track (40 ft)	<486	133 - 184	0	G-BAND 4-6 GHZ	550
TARTAR MK 74 MOD 6/8/A/N/SPG-51C-CWI (40 ft)	IS NOT OPERATED OUT ANTENNA	133 - 184	0	J-BAND 10-20 GHZ	0
AN/SPQ-9B (70 ft)	<1	360	0	I-BAND 8-10 GHZ	300
FCS MK 99 (65 ft)	<1320	360	+5	J-BAND 10-20 GHZ	12000

Table 1

Exhibit 9, p. 3

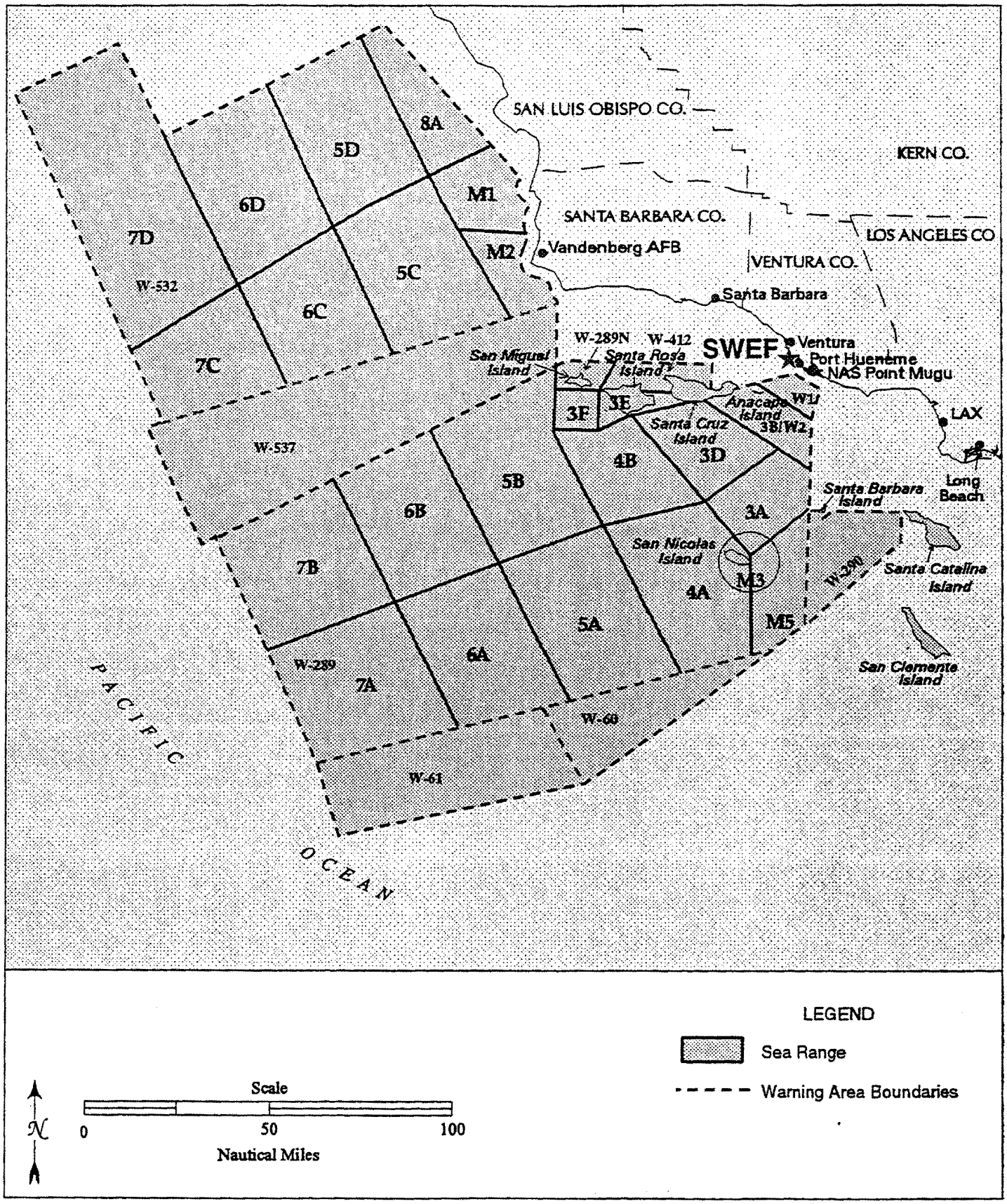


Figure 2-1. Point Mugu Sea Range

EXHIBIT NO.	10
APPLICATION NO.	
CD-4-00	

STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, Governor

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

August 4, 1999

J. W. Phillips, Captain
U.S. Navy
Department of the Navy
Naval Surface Warfare Center
4363 Missile Way
Port Hueneme, CA 93043-4307

RE: **CD-75-99,** Consistency Determination, U.S. Navy, Virtual Test Capability (VTC), Surface Warfare Engineering Facility (SWEF), Port Hueneme

Dear Captain Phillips:

On July 16, 1999, the Coastal Commission staff received the above-referenced consistency determination. In order to fully evaluate this project for consistency with the California Coastal Management Program, the staff requests the following information:

1. Environmental Assessment. The Navy has indicated that it is in the process of preparing an Environmental Assessment for the VTC. Please let us know the status of that document, its anticipated release date, and the anticipated date for the close of the public comment period.

2. Agency Coordination. The Navy states it has sent letters dated July 9, 1999, concerning biological issues to the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Please let us know which offices those letters were sent to, and if possible, the individual agency contact persons who are or will be reviewing the letters. Also, please let us know any responses the Navy receives (either verbal or written) from those agencies.

3. Radar Instructions. Page 9 of the consistency determination references a Navy document entitled: *PHD NSWC Instruction 3120.1A, "Standard Operating Procedures for Radar Systems, High Power Illuminators, and Launching Systems at the Surface Warfare Engineering Facility Complex."* The Navy states these instructions provide "requirements and specific guidance for the safe installation and operation of equipment and systems at the SWEF complex." We would appreciate having the opportunity to review a copy of these "instructions" (assuming they are not classified). If this material is highly technical or too voluminous to be useful, a summary of the instructions may be appropriate.

4. RADHAZ Surveys. Pages 9-11 of the consistency determination discuss RADHAZ assessments that would be conducted on all new radar facilities to be installed, prior to their operation (and further, that annual spot checks and review of each radar

EXHIBIT NO. 11
APPLICATION NO.
CD-4-00

every 3-5 years would also be performed). These surveys will be used to set the parameters to dictate how safe operation of the radars will be maintained. However, the consistency determination does not discuss whether or how this information will be made available to the Commission for its review.

The Navy has previously committed to providing the Commission with future survey information, and to date the Navy has been complying with this commitment. A letter from Capt. Beachy, U.S. Navy, to the Coastal Commission, dated 5 April 1996, stated:

> *We are required to do new RFR studies for new installations, relocations, and modifications.... With respect to future modifications to SWEF ..., the Coastal Commission will be notified in accordance with existing regulations and policy.*

We request that the Navy specifically clarify, in the context of this consistency determination: (1) the extent to which the Navy is willing to afford the Commission an opportunity to review and comment on the results of surveys the Navy conducts prior to commencement of normal operation of the radar equipment; and (2) the extent to which the Navy will provide future survey results to the Commission, including a description of any modifications/operating limitations to the facilities it determines to be warranted on the basis of the survey results.

5. Operating Parameters. A Navy "Presentation to California Coastal Commission" provided during a previous Commission public hearing by PHD NSWC Cmdr. Paul Benfield contained a chart which provided a detailed description of Safe Separation Distances for SWEF emitters (copy attached). Although, as Cmdr. Benfield described in his talk, the Navy used approximations to protect classified data, the chart provided useful information, including "SWEF emitter" data, generic "Navy publication" data, emission sectors, and mainbeam touchdown data for each radar. Information comparable in detail to that provided in this chart should be provided for the proposed new radar equipment. If this information is not available at this time, please explain why, when it will be available, and whether it will be provided to the Commission when it is available.

6. Active Lasers. Page 3 of the consistency determination discusses active lasers. What, if any, testing will be performed for these lasers?

7. Airspace Use. The consistency determination states in the following terms that air activities will occur "primarily" within existing Navy airspace:

The proposed action requires 10 additional aircraft operations and 10 additional boat operations. These operations would continue to be conducted primarily on the Point Mugu Sea Range (Sea Range), which ends 3.5 nautical miles from shore.

We would like to be informed as to the circumstances under which such air operations activity might *not* be conducted within the airspace (i.e., nearer to shore). What is the nearest distance to shore that such an activity could occur? What, if any, additional coordination with the Commission is the Navy willing to commit to in the event air operations occur nearer to shore than the Navy-controlled airspace?

In conclusion, we are requesting the above information in order to enable us to determine the project's consistency with the public access and recreation and marine and terrestrial biological protection policies (Sections 30210-30214, 30230, and 30240) of the Coastal Act. Please provide this information by August 18, 1999, so we can include an analysis of it in time for the August 27, 1999, mailing for the September Commission meeting in Eureka. Feel free to call me at (415) 904-5289 if you have any questions about this information request.

Sincerely,

Mark Delaplaine
Federal Consistency Supervisor

Attachment (Chart)

cc: Ventura Area Office
Chuck Hogle, U.S. Navy
Suzanne Duffy, U.S. Navy
David Kaiser, OCRM
Matthew Rodriguez, Attorney General's Office

G: LU/FC/correspondence/info request, cd-75-95

SYSTEM	CONTROLLED ENVIRONMENT		UNCONTROLLED ENVIRONMENT		EMISSION SECTORS		EMITTER MAINBEAM TOUCHDOWN DISTANCE FROM EMITTER AT SEA LEVEL AND 6 FT ABOVE THE WATER	
SWEF EMITTER NAME Height above Water used in Calculation (ft)	SWEF EMITTER (feet)	NAVY PUBLICATION (feet)	SWEF EMITTER (feet)*	NAVY PUBLICATION (feet)	Approximate bearing (degrees true)	Approximate lower antenna elevation (degrees relative)	6 FT ABOVE THE WATER ft	AT WATER LEVEL (0 FT) ft
FCS MK 92 CAS-CWI (95 ft)	141	285	<183	43	142 - 92	0	4249	4535
FCS MK 92 CAS-Track (95 ft)	61	165	<90	215	142 - 92	0	4249	4535
FCS MK 92 CAS Search (85 ft)	<1	235	<1	305	360	+1.4	4764	5126
FCS MK 92 STIR-CWI (80 ft)	376	570	<491	700	151 - 257	0	8480	9167
FCS MK 92 STIR-Track (80 ft)	127	395	<202	525	151 - 257	0	7066	7639
MK 86 SPG-60 (65 ft)	208	370	<315	300	152 - 261	0	5634	6207
MK 86 SPQ-9A (65 ft)	<1	18	<1	40	360	0	9014	9931
MK 74 MOD 14 (TARTAR SM2/NTU)-CWI (65 ft)	483	1155	<630	1405	138 - 263	0	6761	7448
MK 74 MOD 14 (TARTAR SM2/NTU)-Track (65 ft)	329	885	<615	1605	138 - 263	0	4225	4655
MK 23 TAS (117 ft)	<1	120	<2.5	295	117 - 269	0	1056	1113
MK 57 NSSMS Radar A (65 ft)	262	295	<339	360	137 - 255	0	3380	3724
MK 57 NSSMS Radar B (95 ft)	262	295	<339	360	117 - 260	0	5099	5443
TARTAR MK 74 MOD 6/8/A/N/SPG-51C-Track (40 ft)	238	740	<456	931	133 - 184	0	2435	2865
TARTAR MK 74 MOD 6/8/A/N/SPG-51C-CWI (40 ft)	N/A**	1155	N/A**	1405	133 - 184	0	N/A***	N/A***
AN/SPQ-9B (70 ft)	<1	Not Shown	<1	Not Shown	360	0	7334	8021
FCS MK 99 (65 ft)****	<50	1160	<50	1615	360	+5	Mainbeam Does Not Touch Down	Mainbeam Does Not Touch Down

* Calculations were performed using approximate Permissible Exposure Limits (PELs) to calculate safe separation distances. This was done because the actual PELs used to calculate these distances in this environment are derived from the operating frequency of the emitter, which is classified technical information and not releasable. In order to provide releasable data , a PEL was calculated from an approximate operating frequency of the emitter and subsequently used to calculate the safe separation distances shown. Using the actual PEL (actual operating frequency) yields a safe separation distance less than those shown above. In other words, the values in this table representing safe separation distances are greater than actual.

** System operates in Dummy Load. Safe separation distances are 949 ft and <1231 ft if operated in the Controlled and Uncontrolled environments respectively.

*** System operates in Dummy Load. Mainbeam touchdown distances if operated are 4870 ft and 5730 ft from the emitter at 6 ft above water and at water level respectively.

**** FCS MK 99 transmits at high elevations only. Therefore, the safe distances shown represent distances from the antenna where near field radiation is present and sidelobe energy. The antenna does not point into the shipping lane or on the ground/water in front of SWEF.

General Note: Safe Separation Distances were calculated using emitter characteristics in the RADHAZ survey reports and proprietary software which uses the near field gain of the antenna where applicable.

Mainbeam Safe Separation Distances for SWEF emitters in Controlled and Uncontrolled Environments
(Worse case based on Navy Publication and specific to SWEF installations as presently operated).

DEPARTMENT OF THE NAVY
PORT HUENEME DIVISION
NAVAL SURFACE WARFARE CENTER
4363 MISSILE WAY
PORT HUENEME, CALIFORNIA 93043-4307

IN REPLY REFER TO:

5050
Ser 01/25
August 17, 1999

Mr. Mark Delaplaine
Federal Consistency Supervisor
California Coastal Commission
49 Fremont Street, Suite 2000
San Francisco, CA 94105-5200

Dear Mr. Delaplaine:

In response to your letter of August 4, 1999, the following additional information in support of CD-75-99 is provided:

1. Environmental Assessment (EA). The EA is in internal Navy review. Release is expected by September 1999. Public notification will be pursuant to Navy policy as contained in OPNAVINST 5090.1B CH-1, 2 February 1998. The policy states that a summary of the Finding of No Significant Impact (FONSI) will be published for three (3) consecutive days in the Los Angeles Times and the Ventura County Star. Any interested parties will receive a direct mail copy.

2. Agency Coordination. Copies of letters and responses are enclosed.

3. Radar Instructions. A copy of the instruction is enclosed.

4. RADHAZ Surveys. The RADHAZ surveys will be forwarded to the Commission for review after the surveys have been completed for a particular radar system. The Navy will answer questions that the Commission has regarding the surveys. We will continue to provide the RADHAZ survey results as they are completed, including a description of any modifications/operating limitations to the facilities that the survey determines are warranted.

5. Operating Parameters. The information is not currently available because it is developed at the time of radar installation. The information will be provided to the Commission as part of the RADHAZ survey results.

6. Active Lasers. All lasers would be Class I eye-safe lasers. No site specific testing at SWEF is performed or required prior to use.

7. Airspace Use. The Navy intends to continue to conduct flight operations, using established flight rules (including distance from shore, height above ground and other parameters) which are regulated and enforced by the FAA and local airport authorities. The nearest distance to shore that flight operations can occur is 2000 feet. This is in accordance with 14 CFR Part 91, Subpart B, "Flight Rules," Section 91.119, "Minimum Safe Altitudes, General." The flight rules apply to all government, commercial and private flights. Navy operations will continue to comply with all regulatory restrictions. Historically, only non-availability of Point Mugu Sea Range airspace has caused air operations to be conducted off the Range. As a result, the Navy has not planned any additional coordination with the Commission.

EXHIBIT NO.	2
APPLICATION NO.	
CD-4-02	

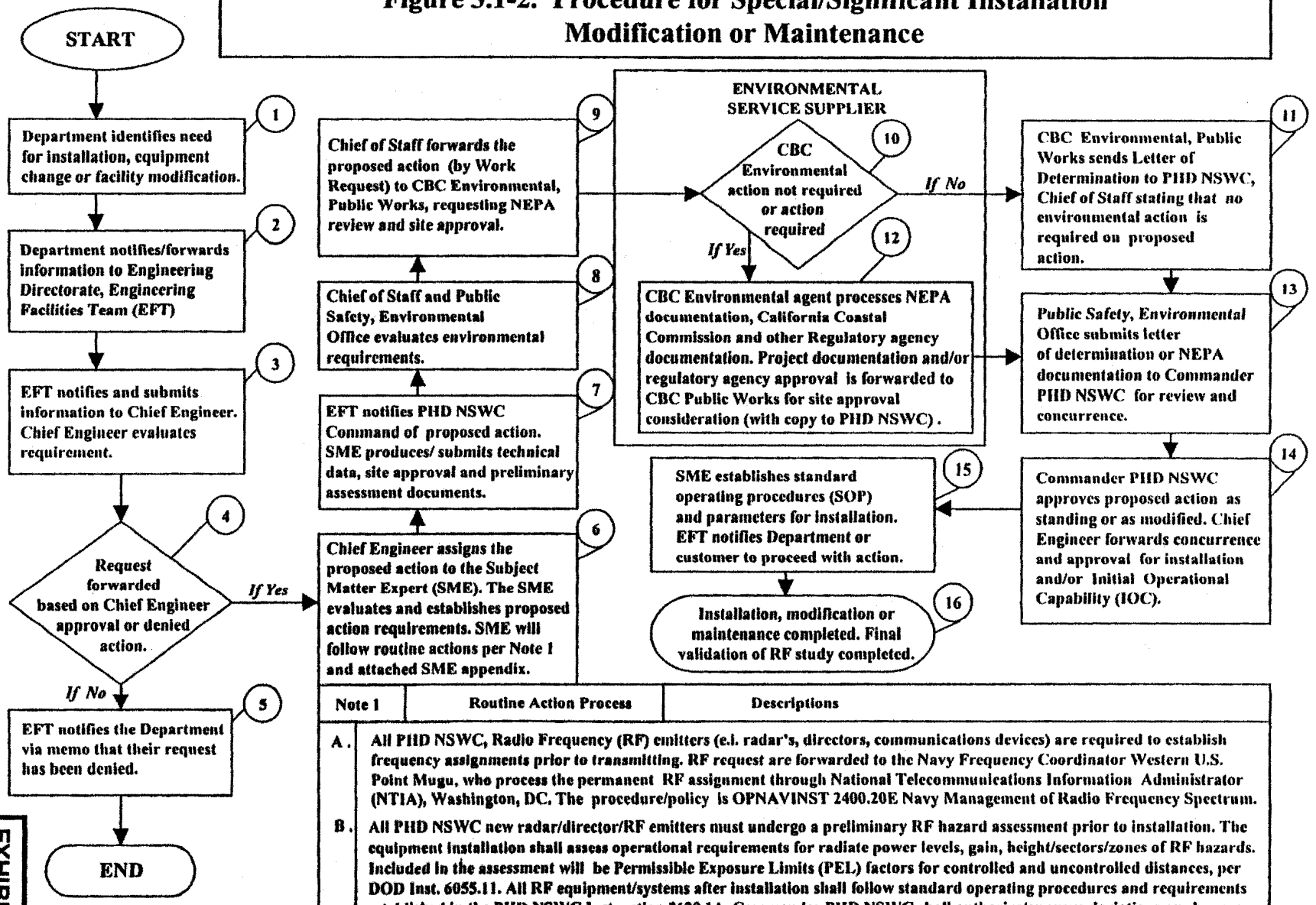
We appreciate your interest and look forward to continuing to work with the Commission and community. If you have any further questions, the Navy point of contact is Chuck Hogle, PHD NSWC, at (805) 228-8225.

Sincerely,

P. K. BENFIELD
Commander, U.S. Navy
Acting

Enclosures: 1. CBC Port Hueneme letter 5090/PW420GPof July 16, 1999
(to U.S. Fish and Wildlife Service)
2. CBC Port Hueneme letter 5090/PW420GP of July 16, 1999
(to National Marine Fisheries Service, Southwest Region)
3. U.S. Fish and Wildlife Service letter of July 30, 1999
4. U.S. National Marine Fisheries Service letter of August 10, 1999
5. PHDNSWCINST 3120.1A

Figure 3.1-2. Procedure for Special/Significant Installation Modification or Maintenance



Note 1	Routine Action Process	Descriptions
A.	All PHD NSWC, Radio Frequency (RF) emitters (e.i. radar's, directors, communications devices) are required to establish frequency assignments prior to transmitting. RF request are forwarded to the Navy Frequency Coordinator Western U.S. Point Mugu, who process the permanent RF assignment through National Telecommunications Information Administrator (NTIA), Washington, DC. The procedure/policy is OPNAVINST 2400.20E Navy Management of Radio Frequency Spectrum.	
B.	All PHD NSWC new radar/director/RF emitters must undergo a preliminary RF hazard assessment prior to installation. The equipment installation shall assess operational requirements for radiate power levels, gain, height/sectors/zones of RF hazards. Included in the assessment will be Permissible Exposure Limits (PEL) factors for controlled and uncontrolled distances, per DOD Inst. 6055.11. All RF equipment/systems after installation shall follow standard operating procedures and requirements established in the PHD NSWC Instruction 3120.1A. Commander PHD NSWC shall authorize/approve deviations or changes.	
C.	After the installation of new radar/director, RF emitters, but prior to operation, PHD NSWC may undergo RF hazard survey performed by SPAWAR, Charleston SC to determine operational safety as required by OPNAVINST 5100.23(E).	

EXHIBIT NO. 3
APPLICATION NO. CD-4-00

U.S. Department
of Transportation

**Federal Aviation
Administration**

Western-Pacific Region

P.O. Box 92007
Worldway Postal Center
Los Angeles, CA 90009

MAR - 9 2000

Mr. Mark Delaplaine
Federal Consistency Supervisor
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Mr. Delaplaine:

In response to your letter dated March 1, 2000, to Mr. Lieber, the Federal Aviation Administration does not have any comments for CD-75-99 consistency determination. The Navy's response to you in their letter of August 16, 1999, is correct and accurate.

If we can be of further assistance, please contact Mr. Charles Lieber, Environmental Specialist, at (310) 725-6535.

Sincerely,

for Leonard Mobley
Manager, Airspace Branch

EXHIBIT NO. 14
APPLICATION NO.
CD-4-00

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

July 30, 1999

Ronald J. Dow, Director
Environmental Division
Department of the Navy
Naval Construction Battalion Center
1000 23rd Avenue
Port Hueneme, California 93043-4301

Subject: Request for Concurrence on Findings for Expansion and Enhancement of Surface Warfare Engineering Facility, Port Hueneme, California

Dear Mr. Dow:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter dated July 16, 1999, concerning the Navy's proposal to expand and enhance the capabilities of the Surface Warfare Engineering Facility (SWEF) at the Port Hueneme Division of the Naval Surface Warfare Center, California. The current SWEF supports a variety of radar, computer, and communications systems, as well as laboratory space, which are used to perform test and evaluation exercises and for training. The radar systems are atop a five-story building on the base and are directed toward the ocean. Aircraft and ship operations occur offshore and on the Point Mugu Sea Range. The SWEF has operated for 15 years.

The proposed projects assume continuation of current SWEF activities, combined with new equipment to develop the Virtual Test Capability (VTC). The VTC is needed to maintain state-of-the-art combat weapons and self-defense system readiness. The new elements proposed are as follows:

1. In terms of capabilities, additions would include three new radar systems, two new optical systems, five additional communications systems, one new network system, and two new launchers.

2. Activities will be increased as follows: 42 hours per year of RF radiation in addition to the current 218 hours per year; two more major maintenance events per year; a doubling of aircraft operations with 10 additional 2-4 hour events per year; and a doubling of boat operations with 10 additional 2-4 hour events per year.

EXHIBIT NO. 15
APPLICATION NO.
CD-4-00

3. Support requirement increases will include the addition of 25 support personnel, use of 1.1 additional megawatts of power per year, and additional consumption of 96 gallons of water per day. No additional natural gas would be needed.

Your letter indicates that an environmental assessment and coastal consistency determination are being prepared. The Service requests that copies of these documents be sent to us for review in addition to the information provided thus far.

The potential effects on wildlife species from the operation of the SWEF are listed in your letter as noise, bird strikes, air emissions, collision, and radio frequency (RF) emissions. We concur that impacts to wildlife are not likely to increase significantly due to the increase in boat and aircraft operations. You also provide data which indicate that RF emissions do not pose a threat to wildlife. This conclusion is based upon the distance birds are likely to be from the radar and if exposed, the assumption that duration of exposure will be short. Also, you state that there have been no such impacts in the past, and that horns and the movement of equipment will cause birds to move away from radar sources. The Service does not have any more recent data than Eastwood's "Radar Ornithology" (1967) as cited in your letter. From discussions with Gail Pringle of your staff, it appears that the literature search for papers describing the effects of RF emissions on wildlife has been exhausted. Consequently, the Service concurs with your findings, as the best scientific evidence indicates that there will be no effects on wildlife from the RF emissions, and the additional emissions only amount to approximately seven minutes per day.

If you have any questions about our comments, please call Rick Farris of my staff at (805) 644-1766.

Sincerely,

Diane K. Noda

Diane K. Noda
Field Supervisor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

AUG 10 1999 F/SW3:CCF

Mr. Ronald J. Dow
Director, Environmental Division
Department of the Navy
Naval Construction Battalion Center
1000 23rd Avenue
Port Hueneme, California 93043-4301

Dear Mr. Dow:

This letter responds to your July 16, 1999, request for the National Marine Fisheries Service (NMFS) to concur with the Department of the Navy's findings that the proposed expansion and enhancement of the Surface Warfare Engineering Facility (SWEF) at the Port Hueneme Division of the Naval Surface Warfare Center, California will have no impact on marine mammals and sea turtles under the jurisdiction of NMFS. Your letter concludes that the proposed action, which includes an increase in 10 aircraft operations and 10 boat operations per year, will have no impact to fish, intertidal life forms or marine mammals.

After reviewing your letter and the July, 1999, Coastal Consistency Determination, I have concluded that the proposed project is not likely to impact any species listed as endangered or threatened under the Endangered Species Act. The project is also not likely to take any marine mammals protected under the Marine Mammal Protection Act (MMPA). Because of the sufficiently high altitudes of the aircrafts (2,000 feet and above) over nearby haulouts and open ocean, and the very low potential for a boat collision with a marine species, the likelihood that a marine mammal or sea turtle would be impacted by the proposed action is extremely low. Therefore, NMFS concurs with your findings of no impact.

Thank you for coordinating with NMFS regarding this proposed project. If you have any questions, please contact Ms. Christina Fahy at (562) 980-4023.

Sincerely,

Rodney R McInnis

Rodney R. McInnis
Acting Regional Administrator

cc: Ken Hollingshead - F/PR

EXHIBIT NO.	16
APPLICATION NO.	
CD-4-00	

Table D-4. 1989 RADHAZ Survey Summary

Findings/Recommendations and Corrective Action Taken in 1989 RADHAZ Report
E89028-C017, June 1989
MK 74/SPG-51C, MK 86/SPG-60, MK 76 Terrier, MK 115, and MK 23/TAS Emitters on Buildings 1384, 5186, and 1292

	PROBLEM	*RECOMMENDATION*	*STATUS*
1989 E89028-C017	1. POTENTIAL HERP ON TOP OF BLD 5186 BY *MK 86/SPG-60* AND *MK 74/SPG-51C* (*MK 74/SPG-51C* TRANSMITTER HAS BEEN REMOVED) SEE NOTE 1	1. RESTRICT RADIATION IN THE DIRECTION OF BLD 5186 USING: A. SOFTWARE CUTOUTS B. OPERATIONAL PROCEDURES C. FLASHING LIGHTS ON BLD 1384 WHEN RADIATING D. AS STANDARDS WERE UPDATED AND MADE MORE STRINGENT, CHANGES WERE MADE.	1. IMPLEMENTED RECOMMENDATIONS 1.B & 1.C. (OPERATIONAL PROCEDURES FOR RADIATING, FLASHING LIGHTS, AUDIBLE INDICATORS, AND RADIATION RESTRICTIONS TOWARD BLD 5186). FLASHING LIGHTS ON ROOF AND IN STAIRWELLS LEADING TO ROOF.
	2. POTENTIAL HERP ON TOP OF BLD 1384 BY *MK 74/SPG-51C* AND BEACH AREA BEHIND 1384 WHEN RADIATING AWAY FROM OPEN OCEAN TOWARD ROOF ACCESS DOOR. SEE NOTE 2	1. INTERLOCK ACCESS DOOR WHERE SPG-51C IS LOCATED.	1. NOT IMPLEMENTED. FLASHING LIGHTS/SIREN IN CONTROLLED AREA SATISFIES REQUIREMENTS. PANEL INSTALLED TO IDENTIFY RADAR SYSTEM RADIATING 2. OPERATIONAL PROCEDURES IN PLACE TO PREVENT RADHAZ TO PERSONNEL.
	3. GENERAL COMMENTS	1. INSTALL RF WARNING SIGNS AROUND EACH ANTENNA, STAIRWELLS LEADING TO ROOF AND ACCESS DOORS. 2. INSTALL MORE PERMANENT NON-CONDUCTIVE BARRIERS AROUND EACH ANTENNA.	1. INSTALLED ON ACCESS DOORS AND IN STAIRWELLS. 2. COMPLETED

NOTE 1: The *MK 74/SPG-51C* has been removed and a new *MK 74/SPG-51C* has been installed on Bldg. 5186. The *MK 115* has been removed The *MK 86/SPG-60* does not pose a hazard because the specification used during the test has been superseded. The power density reported in the report is well within tolerance per 1995 DoD and ANSI specification(s).

NOTE 2: The 1989 report identified problems in the beach area behind building 1384 when radiating away from open ocean toward the roof access door. No absolute measurements were collected to confirm the existence of a RADHAZ problem in the beach area behind 1384. The MK 74 system has been removed from SWEF.

EXHIBIT NO. 17
APPLICATION NO. CD-4-00

Table D-5. 1994 RADHAZ Survey Summary

Findings/Recommendations and Corrective Action Taken in the 1994 RADHAZ Report E94138-C138

	FINDING	*RECOMMENDATION*	*STATUS*
1994 E94138-C138	1. POTENTIAL HERP FROM INMRSAT LOCATED ON WEST PATIO OF BLD 1380.	1. MOVE INMRSAT TO ROOF OF BLD 1380.	1. INMRSAT MOVED TO ROOF OF 1380.
	2. GENERAL COMMENT: A. POTENTIAL HERP ON TOP OF BLD 1384 BY ALL RADAR IF PERSONNEL GET TOO CLOSE. B. MK 92 CAS TRACK CAN RADIATE WEST SIDE OF CENTER TOWER ACCESS LADDER, NEXT TO EXTERIOR STAIRWELL BY BAY 509, ON THE ROOF OF BLD 1384.	1. INSTALL RF WARNING SIGNS IN EQUIPMENT SPACES, AND AT ACCESS POINTS TO ALL RADIATING ELEMENTS. 2. CUTOUTS IN PLACE TO PROTECT BLDG. 1384 OCCUPANTS	1. FLASHING LIGHTS/SIREN IN CONTROLLED AREA SATISFIES REQUIREMENTS. PANEL INSTALLED TO IDENTIFY RADAR SYSTEM RADIATING. 2. OPERATIONAL PROCEDURES IN PLACE. 3. BARRIERS PLACED AROUND RADARS 4. INSTALLED RF HAZARD SIGNS IN STAIRWELLS AT ROOF ACCESS DOORS ONLY. NOT REQUIRED IN SPACES OR AROUND EACH RADIATING ELEMENT.

NOTE: Report indicates that no RF hazard exists anywhere along the West Jetty, La Janelle Park, or along Silver Strand Beach. However, the report notes that the SPG-60, TARTAR SM-2/NTU and TARTAR SPG-51C (similar to *MK 74/SPG-51C* currently on Bldg. 5186) were not available for testing. All measurements in equipment spaces were satisfactory.

Table D-6. October 1996 RADHAZ Survey Summary			
Findings/Recommendations and Corrective Action Taken in 1996 RADHAZ Report E97002, December 1996 MK 92, NSSMS, MK 86, MK 74, TAS Emitters on Building 1384			
	FINDING	*RECOMMENDATION*	*STATUS*
1996 E97002	1. PERSONNEL MAY ACCESS NATO AND TARTAR SM-2 RADARS WHEN ON ROOF	INSTALL PHYSICAL BARRIER (CHAIN) AND WARNING SIGN	CHAIN INSTALLED, RF WARNING SIGN INSTALLED
	2. EXCESSIVE RF LEAKAGE IN MK 92 EQUIPMENT SPACE (CAS TRACK WAVEGUIDE)	ISOLATE LEAK AND REPAIR	RETEST SHOWS LEAK UNDER PEL
	3. RF LEAKAGE IN MK 92 EQUIPMENT SPACE (STIR TRACK WAVEGUIDE)	ISOLATE LEAK AND REPAIR	REPAIRED
	4. PERSONNEL MAY ACCESS MK 92 STIR RADAR ON BLD 1384	INSTALL PHYSICAL BARRIER (CHAIN)	CHAIN INSTALLED, RF WARNING SIGN INSTALLED
	5. SWEF PERIMETER TESTING SAT WITH ALL RADAR		
	6. SWEF COMPLEX ROOF TOP TESTING SAT WITH ALL RADAR		
	7. AT-SEA CHANNEL TESTING SAT WITH ALL RADAR		
	8. TOWER TESTING SHOWS NO RADHAZ WITH ANY RADAR TO SHIPS ENTERING & EXITING PORT		
	9. NO HAZARD TO FUEL FROM ANY RADAR		
NOTE: Report indicates that no RF hazard exists anywhere along the East or West Jetties, La Janelle Park, Silver Strand Beach, boaters, surfers in front of building, or to ships entering or exiting harbor.			

Table D-7. January 1997 RADHAZ Survey Summary			
Findings/Recommendations and Corrective Action Taken in the 1997 RADHAZ Report E96083 January, 1997 MK 74 Emitter on Building 5186			
	FINDING	*RECOMMENDATION*	*STATUS*
1997 E96083	1. PERSONNEL EXPOSURE TO LOCALIZED RF EMISSIONS WHEN THE EQUIPMENT PANELS ARE REMOVED	USE CAUTION WHEN WORKING ON SYSTEM	PROCEDURED INSTALLED TO WARN PERSONNEL OF HAZARD
	2. EXCESSIVE RF IN DIRECTION OF BAY 509EXTERIOR STAIRWELL/ROOF ACCESS STAIRS BY MK 92 CAS TRACK CORRECTED		
	3. PERSONNEL MAY ACCESS ROOFTOP WITH TRANSMITTER RADIATING	INSTALL VISUAL AND AUDIBLE ALARM SYSTEM, WARNING SIGNS	COMPLETED
	4. SWEF PERIMETER TESTING SAT WITH ALL RADAR		
	5. SWEF COMPLEX ROOF TOP TESTING SAT WITH ALL RADAR		
	6. AT-SEA CHANNEL TESTING SAT WITH ALL RADAR		
	7. TOWER TESTING SHOWS NO RADHAZ WITH ANY RADAR TO SHIPS ENTERING AND EXITING THE PORT		
	8. NO HAZARD TO FUEL FROM ANY RADAR		
NOTE: Report indicates that no RF hazard exists anywhere along the East or West Jetties, La Janelle Park, Silver Strand Beach, boaters, surfers in front of building, or to ships entering or exiting harbor.			

APPENDIX C: DESCRIPTION OF AIRCRAFT AND BOATING OPERATIONS

1. AIRCRAFT ACTIVITIES

A. Typical Flight Test Procedures

Commercial Learjets

Commercial Learjets are used to evaluate radar systems when aircraft control and specific test objectives must be met. Learjets offer the opportunity to test the minimum and maximum detection and tracking ranges of radar systems.

Procedure. Procedures for evaluating systems using commercial Learjets are typically conducted as follows:

1. A Test Plan is developed for the operation, which includes test objectives, aircraft profiles, number of sorties, data collection requirements, and data analysis requirements.

2. The Test Plan includes specific procedures for communication protocol (i.e., aircraft communications with SWEF Test Conductor or Point Mugu Range Operations as appropriate). Range and flight safety is discussed and aircraft control is established (e.g., instrument/visual flight rules in effect, control of aircraft from the Sea Range or SWEF).

3. SWEF site personnel are briefed on the operation.

4. Preflight checks are completed on the aircraft. The pilot is briefed on the scenarios and number of sorties, as are Point Mugu Range Operations and SWEF personnel (e.g., radar operator and support personnel). The Frequency Management Center at Point Mugu is briefed on the operation.

5. The SWEF System is activated and pre-checks completed such as antenna rotation, RF emission checks, tracking and search radar preliminary checks, RF emission safety cutouts checked, etc.

6. The aircraft flies into the operations area to establish communications with the Operations Conductor.

7. The aircraft is directed to the initial point where the operation begins.

8. The aircraft conducts a series of sorties according to test plan requirements and under a communication protocol established in the test plan, and within FAA and/or Range safety requirements, such as limited speeds, limited flight paths, limited altitude, etc.

9. The system located at the SWEF radiates RF while search and track radar are active and while the aircraft is conducting sorties. The system is operational and data collection equipment is active.

10. Data collection is completed.

11. Operation is ended and data are analyzed.

Commercial Learjets with TOW Targets

This configuration is used to test system performance against a known radar cross section. Sensor detection and tracking is evaluated against the Learjet and/or tow target that is tethered to the aircraft. Tow targets are typically small and aerodynamically designed; a typical tow target is approximately 6 feet in length and 10 inches in diameter. Other tow targets include 6- to 18-inch metal spheres used for radar calibration.

Procedure. Same as above. Flight Safety and operations area determinations include the tow target.

Commercial Learjets with Electronic Support Measure (ESM) Equipment

This configuration is used to evaluate RF emissions and system parameters. ESM equipment located aboard an aircraft may be used to collect emission data from a particular emitter located at the SWEF complex.

Procedure. Same as above.

Commercial/Private Aircraft

The commercial and/or private aircraft used for the operations described above include single or multi propeller planes. Visual or Instrument Flight Rules may be used. The aircraft fly on within the Point Mugu Sea Range operations area and FAA airspace.

Procedure. Same as above for commercial Learjets.

Commercial/Private Helicopters

These helicopters are used to perform testing where detection and tracking of low-slow aircraft is required. In addition, they may meet specific objectives, such as measuring the effect of helicopter rotor blades on system performance. Helicopters are sometimes used with tow targets. A small object with known RF reflection characteristics at various altitudes and ranges is tethered to the helicopter to measure system performance. Helicopters may also be used with Electronic Support Measure (ESM) equipment. As with Learjets, the ESM equipment evaluates RF emissions and system parameters.

Procedure. Same as above for commercial Learjets.

Military Jet Aircraft

Military jets are used infrequently to evaluate performance against high speed and/or high altitude maneuvering targets. Sensor detection and tracking is evaluated against high-speed turns and at speeds above those attainable by commercial jets. Trajectories may be tangential and/or radial relative to SWEF. Military jets are also used to evaluate the effectiveness of shipboard systems against electromagnetic counter measures (ECM), also known as electronic attack. Jamming systems onboard the aircraft will monitor SWEF system characteristics and produce emissions back toward the system under a test designed to preclude system detection

and tracking. In addition, ESM equipment located at the SWEF complex is evaluated for effectiveness in identifying the presence of jamming and identifying the aircraft type, based on the RF emission characteristics of the aircraft. Operations using military jets are conducted on the Sea Range or in FAA airspace.

Procedure. Same as above for commercial Learjets.

The following tables show the types of aircraft and the operations conducted using them. Table C-1 shows historical range operations for fixed wing aircraft that have occurred since 1989.

B. Aircraft Flight Test Schedules

The following are representative of the types of test schedules that occur during SWEF operations; individual operations may vary due to individual test requirements.

Air Channel Tests

The purpose of the air channel test is to test the ability of the AN/SPQ-9B radar to detect and track a variety of fast moving (i.e. faster than 90 knots) targets near the radar horizon. The air channel test targets are varied in radar cross section (RCS) and speed. The accuracy of the target tracks is determined and the ability of the radar to distinguish between two targets close in range, bearing and radial velocity is tested. The maximum limits of the radar's detection range is determined. Due to safety concerns with land-based testing, the minimum detection range is not tested for the air mode.

All air channel tests are conducted with the AN/SPQ-9B air and surface modes operating to ensure that there is no inter-channel interference. All targets begin inbound runs, towards the SWEF, beyond the radar horizon. All targets provide several inbound and outbound runs per test. Aircraft include Learjets and a helicopter (military or commercial).

Each test verifies several requirements, and most requirements are verified in each test. In addition to observing the tracks displayed on the console, all recorded test data are analyzed to verify that the radar meets each of the air mode requirements. AN/SPQ-9B radar data and truth data are recorded throughout the test. AN/SPQ-9B data recorded includes the target contacts and track history.

Description of Dual Learjet Flight Tests

PURPOSE

The purpose of the dual Learjet test is to test the resolution capabilities of the AN/SPQ-9B radar while ensuring that the air mode detection and tracking requirements are met. The range, bearing, and radial velocity accuracy of the radar is evaluated, and the firm-track range of the radar is determined. The false track rate for the test period is determined, as well. During this test event, the ability of the radar to operate while being jammed is tested.

Table C-1. SWEF Historical Range Operations of Fixed Wing Aircraft			
Date:	*Aircraft Type:*	*Start Range*	*Final Range*
24-28 April 1989	Lear	15 Mi.	0 Mi.
	Altitude	Speed	Runs
	3000 '	250 Knts.	27
Comments: Initial Raids Testing. Aircraft Controlled By NAWC Point Mugu When On Range and Then by Oxnard Airport When Off Range. SWEF Flyover was Required.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
10,18,19 Dec. 1990	F-4 And F-86	25 Mi.	5 Mi.
	Altitude	Speed	Runs
	300-5000 '	350 Knts.	27 Total (13.5/plane)
Comments: ECM Exercise.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
7 Jun.-31 July 1990	A-4,F-4,F-16,F-18	Note 1	Note 1
	Altitude	Speed	Runs
	NA	350 - 450 Knts.	70 Total (15.5/plane)
Note 1: Data Not Available Comments:. SAR-8 Exercise. Approximately 8 Days Used in This Time Frame to Conduct Flight Operations.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
12-Mar-91	Lear	Note 1	Note 1
	Altitude	Speed	Runs
	Note 1	250 Knts.	Note 1
Note 1: Data Not Available. Comments: ECM Exercise.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
31 Oct. 1992	Lear	20 Mi.	5 Mi.
	Altitude	Speed	Runs
	5000 '	250 Knts.	20
Comments: Gulf Support, ECM Exercise.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
28 Sept. 1993	F-18, Lear	20 Mi.	1 1/2 Mi.
	Altitude	Speed	Runs
	200 - 1500 '	300 - 500 Knts	22
Comments: Special Use Airspace Demonstration.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
25 Sept. 1994	Lear	20 Mi.	6 Mi.
	Altitude	Speed	Runs
	100 ' - 1000 '	250 Knts.	25
Comments: Golden Bird 7P/R Testing, 717C OP Program.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
11 Nov. 1995	Lear	25 Mi.	10 Mi.
	Altitude	Speed	Runs
	5000 '	250	6
Comments: PMTC Air-op.			
Date:	**Aircraft Type:**	**Start Range**	**Final Range**
7 Aug. 1997	Lear	20 Mi.	3.5 Mi.
	Altitude	Speed	Runs
	2000 '	275 Knts.	12
Comments: PMTC Air-op, ECM Jamming of TAS.			

Table C-2 below shows the typical test schedule for flight tests using dual Learjet aircraft.

Table C-2. Test Schedule for Dual Learjet Flight Test

Time	*Action*	*Participants*
T-24 hrs	Conduct pre-op brief SWEF First GO/NO GO decision	SPQ-9B Test Director, SPQ-9B Test Conductor, PHD NSWC Learjet pilots Test Director and Test Team
T-2 hrs	Conduct pre-op brief at SWEF	SPQ-9B Test Director, SPQ-9B Test Conductor, SPQ-9B Test Team
T-1.5 hrs	Conduct radar checkout procedures Man Test Control at SWEF	SPQ-9B Test Team Test Director
T-1 hr	Check communications Install DGPS units on aircraft and checkout	SPQ-9B Test Team, SPQ-9B Test Conductor, PHD NSWC
T-50 min	Man aircraft	Learjet Pilots,
T-45 min	Second GO/NO GO decision based on radar and aircraft status	SPQ-9B Test Director, PHD NSWC
T-15 min	Final GO/NO GO decision If GO, launch aircraft	SPQ-9B Test Director, Aircraft base
T-5 min	Begin recording truth data and continue throughout the entire exercise Begin recording AN/SPQ-9B data	PHD NSWC SPQ-9B Test Team
T	Begin the first target profile	All hands
T+4 hrs	Complete exercise	All hands
T+5 hrs	Conduct post-op brief at SWEF	SPQ-9B Test Director, SPQ-9B Test Conductor, PHD NSWC
T+24 hrs	Receive truth data from PHD NSWC	SPQ-9B Test Director and Test Team

Source. U.S. Navy Port Hueneme Division Surface Warfare Center, Port Hueneme, CA

Learjet and Helicopter Aircraft Test

PURPOSE

The purpose of this test is to demonstrate most of the air channel capabilities and to also ensure that the radar only outputs a single track on a target that is detected in both the surface and air channels. A Learjet and a helicopter are used for this test. The Learjet is tracked mostly in the air channel but also is detected in the surface channel as the plane turns tangential to SWEF, causing the radial velocity to drop below 90 knots. The helicopter tracked mostly in the surface

channel because of its slow speed, but is also seen in the air channel when the helicopter flies near SWEF, causing a large signal return.

The Learjet is an inexpensive, non-stressing target used to test the air channel. The Learjet flies a series of inbound radial profiles, always starting beyond the predicted radar horizon. The Learjet flies both non-maneuvering and maneuvering inbound profiles towards SWEF. Since the unambiguous range of the air mode is so small (≤ 4 nm) it is easy to test the clutter rejection capability of the radar with the Learjet flying near the islands.

The helicopter is an excellent target to test both air and surface channels of the radar because the speed and size of the helicopter causes both modes to detect the target. This test ensures that the radar merges these tracks before sending them to the Combat Direction System.

Table C-3 shows the test schedule for the Learjet and helicopter flight tests.

Table C-3. Learjet and Helicopter Flight Test Schedule

Time	*Action*	*Participants*
T-24 hrs	Conduct pre-op brief SWEF First GO/NO GO decision	SPQ-9B Test Director, SPQ-9B Test Conductor, PHD NSWC Learjet and Helo pilot Test Director and Test Team
T-2 hrs	Conduct pre-op brief at SWEF	SPQ-9B Test Director, SPQ-9B Test Conductor, SPQ-9B Test Team
T-1.5 hrs	Conduct radar checkout procedures. Man Test Control at SWEF	SPQ-9B Test Team Test Director
T-1 hr	Check communications Install DGPS units on aircraft and checkout	SPQ-9B Test Team, SPQ-9B Test Conductor, PHD NSWC
T-50 min	Man aircraft	Learjet Pilot, Helo Pilot
T-45 min	Second GO/NO GO decision based on radar and aircraft status	SPQ-9B Test Director, PHD NSWC
T-15 min	Final GO/NO GO decision If GO, launch aircraft	SPQ-9B Test Director, Aircraft base
T-5 min	Begin recording truth data and continue throughout the entire surface craft exercise Begin recording AN/SPQ-9B data	PHD NSWC SPQ-9B Test Team
T	Begin the first target profile. Refer to Section 1.A for the specific test procedures	All hands
T+4 hrs	Complete exercise	All hands
T+5 hrs	Conduct post-op brief at SWEF	SPQ-9B Test Director, SPQ-9B Test Conductor, PHD NSWC
T+24 hrs	Receive truth data from PHD NSWC	SPQ-9B Test Director and Test Team

Source. U.S. Navy Port Hueneme Division Surface Warfare Center, Port Hueneme, CA

APPENDIX D: RADIO FREQUENCY ELECTROMAGNETIC FIELDS (RF AND EMF)

The SWEF complex contains several devices capable of generating and emitting electromagnetic, or radio frequency, radiation. These systems are primarily radar systems, illumination systems, and communication systems. A complete description of these systems is provided in Appendix A. These systems all produce radio frequency (RF) emissions within the radio frequency permissible exposure limit guidelines initially established by the Institute of Electric and Electronic Engineers and later adopted by the American National Standards Institute and the Department of Defense (DOD). As a supplement to sections 3.1 and 4.1, this appendix provides background information on electromagnetic energy and associated health and safety concerns. Discussions of SWEF emitters and the results of the electromagnetic surveys conducted at the SWEF complex are included.

1. ELECTROMAGNETIC WAVE

Electromagnetic waves are a form of energy that travels at the speed of light in a vacuum. A radiating electromagnetic wave consists of an electric and a magnetic field, which are coupled together and oscillate at a particular frequency. The moving electrical charges in a transmitting antenna travel outward from the antenna in a manner similar to the pattern of waves on the surface of a pond produced by a rock tossed into the water. When these fields are intercepted by a receiving antenna, a charge, current, or field is induced in the antenna that can be amplified and processed to generate phenomena such as television pictures or radio programs.

A. Electromagnetic Spectrum

The electromagnetic spectrum is divided into different regions based on wavelength and frequency. The entire region of the electromagnetic or radio frequencies is illustrated in Figure D-1 and is known as the electromagnetic spectrum.

A.1 Ionizing Versus Non-Ionizing Radiation

Electromagnetic waves at various frequencies exist in nature. For example, when lightning discharges it creates RF pulses over a broad range of frequencies. The background electromagnetic environment is evident by the static heard on a radio or the static seen on a TV screen when an unused station is selected. Incidental RF emissions arise from common man-made sources, such as fluorescent light circuits, electrical motors, and automotive ignition systems. Intentionally generated RF emissions include communication systems; radar systems for surveillance, navigation, and weather monitoring; satellite links; and portable cellular phones.

As depicted in Figure D-1, the RF region is defined as the range of electromagnetic waves with frequencies between 3 kHz and 3,000 GHz. The corresponding wavelengths extend from 100 km to 1mm in length.

An important distinction exists between ionizing and non-ionizing regions of the spectrum. Electromagnetic waves having frequencies greater than 30,000,000 GHz can cause electrons to be ejected from atoms or the bonds between atoms or molecules to be broken, in a process

called ionization. X-rays, gamma rays, and cosmic rays are ionizing forms of radiation. The radio frequencies transmitted by current and proposed systems at the SWEF are between 225 MHz and 11 GHz, all of which are non-ionizing frequencies. This means that the emissions do not have the energy required to produce ionization in cells or tissue.

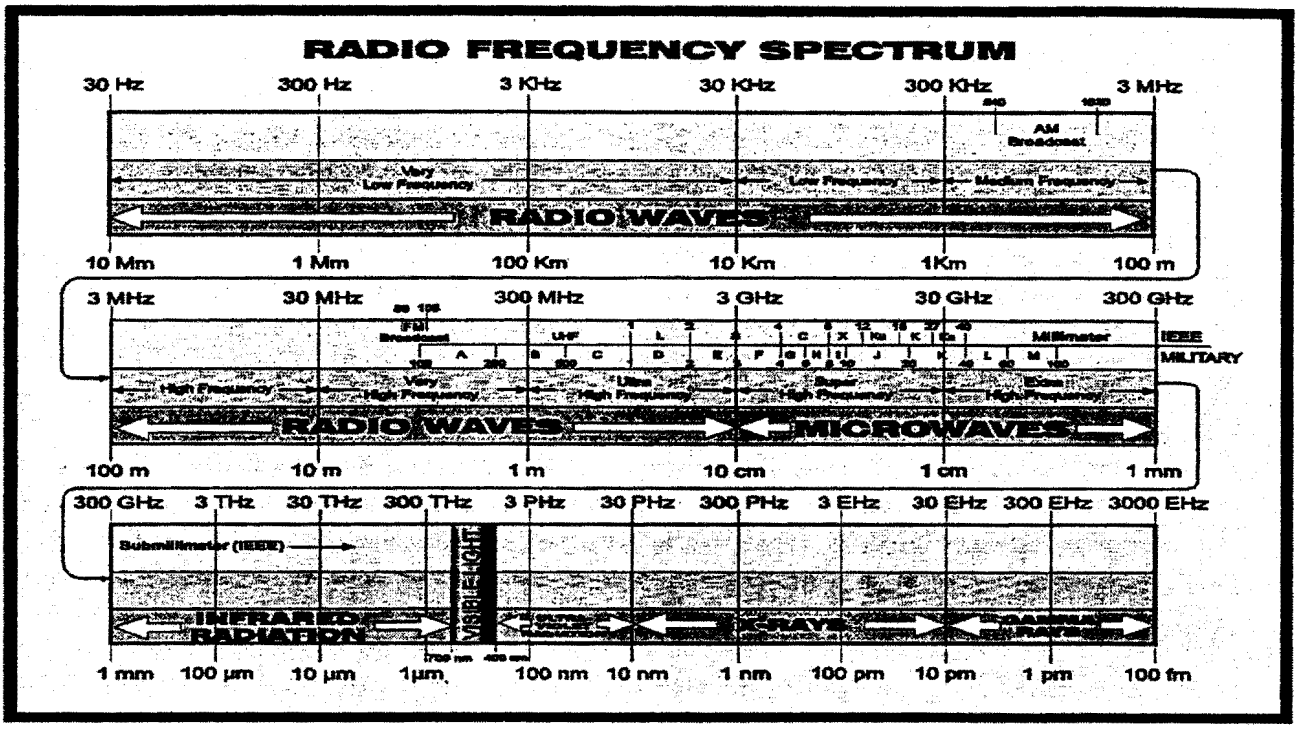


Figure D-1. Electromagnetic Spectrum

A.2 Ultraviolet, Visible, and Infrared Radiation

The ultraviolet (UV) frequencies, shown in Figure D-1, are non-ionizing waves that occupy the transitional period between ionizing and non-ionizing radiation. Photon energies are sufficient to produce adverse biological changes, but do not cause ionization of molecular structure. Common examples are sunburn produced from excessive exposure to the sun's ultraviolet rays, and premature aging and skin cancers associated with long-term exposure. Other examples of the energetic nature of ultraviolet rays are seen in the deterioration of plastics and various paints from sunlight exposure.

Next to the ultraviolet frequencies lies a narrow portion of the spectrum that is visible as ordinary light. Photon energies at these frequencies can produce photochemical changes in specialized organic molecules that make vision possible and that allow plants to convert the energy in sunlight through photosynthesis. Lasers are examples of emissions in the visible range.

The region adjacent to the visible light is the infrared (IR) region. IR wavelengths are a fraction of a millimeter in length and can be absorbed by the surface layers of the skin. Thermal sensors in the skin produce sensations of warmth or heating in response to infrared radiation. IR sensors in the SWEF do not emit IR energy. They are passive receivers and detect very small

changes in the area surveyed in order to discriminate objects that are hotter or colder than the background levels, such as a ship at sea or an aircraft in flight.

Concerns dealing with biological hazards from exposure to ultraviolet, visible, or IR frequencies do not apply to frequencies used by radio frequency emitters or RF generating devices that are existing or proposed to be used at the SWEF.

A.3 Radio Frequencies and Microwaves

The portion of the RF region where frequencies are between 3 GHz and 300 GHz is commonly called the microwave region. The principal biological effect that can be associated with microwave exposure is tissue heating, similar to that occurring with infrared, except microwaves penetrate deeper into tissue. As an example, microwave ovens penetrate further into foods, which requires less time than would be required in a conventional oven where heat must be transferred from the food surface to interior areas. Ultra High Frequency (UHF) communications transmission equipment emits energy in the microwave region, but at very low power levels in comparison to radar equipment and poses no threat to persons in the uncontrolled environment.

B. Electromagnetic Effects

When an object interacts with an electromagnetic wave, the wave is either transmitted, reflected, absorbed, or a combination of these processes occurs. If absorption involves sufficient transfer of energy above some threshold level, then an adverse effect may occur. The electromagnetic frequency regions discussed previously are useful in characterizing the type of biological mechanisms that are involved when the body interacts with the electromagnetic waves. The permissible exposure limits (PEL) are based upon the thermal effects of a field (e.g., the actual heating of tissue due to the absorption of energy). The human body itself cannot directly sense electromagnetic energy, except for the small range of frequencies that are seen as visible light and the infrared frequencies that are felt as heat. RF exposure limits are frequency dependent and are based upon whole body exposure averaged over a specified period of time (e.g., 6 minutes or 0.1 hour).

Typically, restrictions are placed on powerful communication systems, radar systems, or illumination systems to prevent adverse events from occurring. Restrictions include hardware and software programs that limit the sweep range, intensity, and duration of emission. The following sections discuss RF field effects and further discuss precautions taken to prevent unsafe emission levels.

B.1 Hazards of Electromagnetic Radiation to Personnel (HERP)

Radio Frequency Exposure Standards

Safety exposure guidelines have been established to prevent harmful effects in human beings from exposure to RF fields. The guidelines are based upon a consensus-derived voluntary standard designed to protect the public from exposure to these systems. The standard was developed by the Institute of Electrical and Electronics Engineers (IEEE), which is a non-governmental standards organization. The standard was later approved and adopted by the American National Standards Institute (ANSI) after more than nine years of open, public

review by over 120 internationally recognized experts from over 14 different disciplines, including scientists, public health officials, medical doctors, engineers, and technical experts from industry, academia, and government.

The ANSI guidelines cover the frequencies from 3 kHz to 300 GHz and include guidelines for two distinctly different environments, controlled and uncontrolled. Generally, controlled environments represent areas that may be occupied by personnel who accept potential exposure as a part of their employment or duties. They are individuals who knowingly enter areas where such levels are to be expected. Existing physical barriers or areas such as fences, perimeters, or the weather deck of a ship may be used to delineate the controlled environments. Uncontrolled environments generally represent living quarters, workplaces, or public access areas where persons would not expect to encounter high levels of RF energy. The Permissible Exposure Limit (PEL) for the controlled environment established is based on a 10 times safety factor (0.4 W/kg), averaged over the whole body. In the uncontrolled environment, the exposure limit is based on a 50 times safety factor (0.08 W/kg), averaged over the whole body. The reduction of uncontrolled areas is designed to maintain safe exposure levels in public sector areas.

The vast majority of the population receives exposure to RF levels that are typically hundreds of times lower than the permissible exposure limits. Somewhat higher exposures occur to those having occupations involved with RF work, but at the SWEF, these levels are still within permissible levels. Since the intensity of RF fields decreases with distance from an antenna, an individual's exposure to RF fields is primarily governed by the nearest single RF source. The nearest source of RF could be a cellular phone, a car's CB radio, a neighbor's ham radio, navigational radar on board private or commercial boats, or the local radio station. Thus, in many cases, exposure arising from nearby RF emitting sources would overshadow those from major RF emitting antennas that are located at greater distances from the individual (such as SWEF emitters). All emitters operating at SWEF have been elevated well above the ground and RF surveys have confirmed that exposure limits in adjacent public areas are well under permissible exposure limits. In most cases, the level of RF emissions to adjacent areas has been too low to measure with RF radiation hazard meters.

Absorption of RF Energy

Interactions of RF fields with the body are dependent upon frequency. If the frequency is too high it will not penetrate deeply into the body. If frequency is too low, it will bypass the body. Another factor that affects the relative absorption of RF by the body is the intensity of the field. The intensity is based upon the power of the RF wave. The number of photons and the frequency of those photons determine the RF wave intensity. Therefore, changing either the photon number or the photon frequency can alter the intensity of a field. RF systems currently installed at the SWEF and proposed for installation are at high frequencies and low RF intensities and do not produce energy levels high enough to cause damage to persons in surrounding areas. The exact intensity of the emissions is classified data, but the Navy has provided ranges of intensities for the purpose of discussion in this EA.

Radio Frequency Thermal Effects

Exposure to sufficiently high doses of RF would result in energy being deposited in body tissues in the form of heat. This principle is used in medical diathermy units for deep heating of tissues to aid in healing and in microwave ovens for cooking. The temperature regulation system of the human body has evolved to maintain an internal core body temperature of approximately 98.6 degrees Fahrenheit. Normal physiological processes (called thermo-regulation), such as sweating, increased blood flow to the skin, and increased respiration, help the body compensate for over heating. If exposure to RF is excessive in terms of intensity and exposure time, then the body's thermoregulatory capabilities may be exceeded, with adverse effects arising from increased internal temperatures.

As discussed previously, radio frequency safety guidelines in the United States include an additional safety factor of 10 in defining a safe level for human exposure in controlled areas. This level is equivalent to an absorption rate of 0.4 W/kg averaged over the whole body. Exposures where the absorption rates are at or below 0.4 W/kg contribute to a heat load that is well within the body's thermoregulatory capabilities and would correspond to levels typically experienced during minor physical exertion or under moderate ambient temperature conditions.

Radio Frequency Environment at SWEF

Radio frequency emissions occur when systems such as search radar or fire control radar are searching/tracking airplanes and ships during system testing. Safety is the primary consideration when emitting radio frequencies at the SWEF. Before and after installation of radio frequency emitting systems, an evaluation is completed to ensure no hazards are present to personnel working at SWEF, residents, and recreational users of the neighboring community, wildlife, or vegetation in the vicinity. Results of a pre-installation assessment determine where the systems will be installed as well as any limitations on the direction in which radio frequencies are emitted. Following radar system installation, a site survey called a Hazards of Electromagnetic Radiation to Personnel (HERP) is performed to test the radio frequency emission strength and further define in which directions it is acceptable or not acceptable to emit radio frequencies. Surveys concentrate on radio frequency emissions that are transmitted into the sky through the antennas located on the roof, as well as emissions inside the equipment spaces in the building. The Space and Naval Warfare Systems Center, Charleston, South Carolina (SPAWAR (formally the Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, East Coast Division, [NISE East]), performs the surveys.

At the SWEF complex, electromagnetic radiation hazard surveys have been and are conducted every time a radar system is installed. Surveys conducted in 1989, 1994, 1996, and 1998 concluded that the all radar systems are operating safely. When a survey is conducted, the radar is turned on and emissions are measured in places where personnel and members of the general public could be located. The measurement devices are hand-held instruments connected to a small antenna at the end of a non-conducting wand, which captures the radio frequency emissions. When the antenna is exposed to significant radio frequency emissions, it produces an electrical signal representative of the strength of radio frequency emissions. The electrical signal produced by the antenna is sent to the hand-held instrument. The instrument displays the field or power level for the point where the measurement is collected. All

measurements are compared to the permissible exposure levels to which people can safely be exposed for a specified amount of time.

ANSI/IEEE and DOD exposure limits in the uncontrolled environment (public) are maintained in all adjacent public areas. Should RF studies and/or RF field measurements indicate potential hazards to persons within the complex or surrounding public areas, emitter characteristics would be changed to ensure that RF safety limits are met. This involves changing the physical placement of an antenna, lowering transmitter output power, and adjusting RF transmission sectors (establishing non-radiate sectors) in both bearing and elevation, and establishing administrative procedures for RF transmissions. One or more of these mitigating techniques is implemented to ensure safety of RF transmissions.

The safety controls (e.g., sensor, switches, and/or procedures) applied across the board to all emitters installed at the SWEF complex prevent emitters from pointing at houses, beaches, parks or commercial buildings within the area. These safety controls are implemented based on the elevation and bearing of the antennas (pointing sectors). Safety switches send an electrical signal to the radio frequency transmitter and stop the transmitter from operating. In some cases, the computer program functioning with the equipment senses the antenna position in terms of elevation and/or bearing. The RF transmitter is automatically shut down when the antenna is positioned into a non-radiate sector to ensure that emissions from these systems are controlled. For example, fire control radar installed at SWEF is not pointed below the horizon. No significant radio frequency emissions have been measured at the beaches, buildings, or water near SWEF. Although no safety devices have ever failed at the SWEF complex, as an added safety measure, processes and procedures are in place at the SWEF complex to ensure emission sectors are operating properly each and every time an emitter actively radiates out the antenna. Field measurements collected during RF surveys conclude that even if all emitters were active simultaneously (worst case and not a typical scenario), no significant levels of RF are measurable at surrounding recreation areas. (This means that with all emitters pointing at the same location and emitting RF at the same time, no significant RF has been [or would be] detectable at surface locations where the public may be present.)

For all emitter installations at SWEF, both ANSI/IEEE C95.1 - 1991 and DOD standard 6055.11 "Protection of DOD Personnel from Exposure to Radio Frequency Radiation" exposure limits are maintained where Navy personnel and the general public may be located. All DOD radar systems and operations, including those at SWEF, follow the same exposure guidelines required for commercial activities that generate radio frequency emissions such as communication systems, airport radar, microwave ovens, and radio stations. The PEL for controlled environments is shown in Table D-1. The PEL for uncontrolled environments is shown in Table D-2.

The SWEF complex is located at the entrance to Port Hueneme Harbor as shown in Figure 1-2 (Chapter 1 of this Environmental Assessment). The entire complex is located on Navy-owned property with a personnel exclusion fence around the perimeter. Public access to the SWEF complex is not permitted. All emitters are installed on buildings that are accessible through the building entrance only and are installed approximately 40 to 120 feet above the ground. Additionally, emissions from the high power, high gain search radars, tracking radars, and illumination systems are limited through elevation such that RF exposure limits (commercial and Department of Defense limits) within the complex, as well as public areas, are maintained.

Table D-1. Maximum Permissible Exposure for Controlled Environments (Persons Aware of Their Exposure)

RADIO FREQUENCY ELECTROMAGNETIC FIELDS FOR SWEF EMITTERS

Frequency Range (f) (MHz)	*Electric Field (E) (V/m)*	*Magnetic Field (H) (A/m)*	*Power Density (mW/CM2)*	*Averaging Time (Tavg) (minutes)*
300 - 3000	N/A	N/A	f/300	6
3000 - 15000	N/A	N/A	10	6

E is electric field component expressed in volts per meter (V/m)
H is magnetic field component expressed in Amps per meter (A/m)
F is frequency expressed in MHz

PULSED RADIO FREQUENCY FIELDS FOR SWEF EMITTERS

Frequency Range (f) (MHz)	*Peak Electric Field (E) (kV/m)*	*Peak Power Density/Pulse for Pulse Durations < 100 msec (mW/CM2)*
0.1 - 300000	100	(PEL)(Tavg)/(5)(pulsewidth)

E is electric field component expressed in kilovolts per meter (KV/m)
H is magnetic field component expressed in Amps per meter (A/m)
F is frequency expressed in MHz

PARTIAL-BODY EXPOSURES FOR RADIO FREQUENCY FIELDS FOR SWEF EMITTERS

Frequency Range (f) (MHz)	*Equivalent Power Density (mW/CM2)*
300 - 6000	< 20
6000 – 96000	< 20(f/6000)0.25

E is electric field component expressed in kilovolts per meter (kV/m)
H is magnetic field component expressed in Amps per meter (A/m)
F is frequency expressed in MHz

Table D-2. Maximum Permissible Exposure For Uncontrolled Environments *(Persons Unaware of Their Exposure)*

RADIO FREQUENCY ELECTROMAGNETIC FIELDS FOR SWEF EMITTERS

Frequency Range (f) (MHz)	*Electric Field (E) (V/m)*	*Magnetic Field (H) (A/m)*	*Power Density (mW/CM2)*	*Averaging Time (Tavg) (minutes)*
300 – 3000	N/A	N/A	f/1500	30
3000 – 15000	N/A	N/A	f/1500	90000/f

E is electric field component expressed in volts per meter (V/m)
H is magnetic field component expressed in Amps per meter (A/m)
F is frequency expressed in MHz

PULSED RADIO FREQUENCY FIELDS FOR SWEF EMITTERS

Frequency Range (f) (MHz)	*Peak Electric Field (E) (kV/m)*	*Peak Power Density/Pulse for Pulse Durations < 100 msec (mW/CM2)*
0.1 - 300000	100	(PEL)(Tavg)/(5)(pulsewidth)

E is electric field component expressed in kilovolts per meter (kV/m)
H is magnetic field component expressed in Amps per meter (A/m)
F is frequency expressed in MHz

PARTIAL-BODY EXPOSURES FOR RADIO FREQUENCY FIELDS FOR SWEF EMITTERS

Frequency Range (f) (MHz)	*Equivalent Power Density (mW/CM2)*
300 - 6000	f/1500
6000 – 96000	20

E is electric field component expressed in kilovolts per meter (kV/m)
H is magnetic field component expressed in Amps per meter (A/m)
F is frequency expressed in MHz

RF hazard warning signs are posted at all locations within the building and roof tops where access to the transmitting antennas is restricted. As discussed in more detail later, all RF emissions are lower in public areas than within the SWEF complex because the RF fields decrease in intensity as the distance from the emitter is increased. All emitters located at SWEF, including those that are proposed, are or would be installed on Navy-owned property and do not interfere with the public's ability to use surrounding coastal resources.

The emission profiles of each high-power emitter currently installed at the SWEF complex are shown in Table D-3. The minimum safe separation distances shown represent the distance from the emitter at which the permissible exposure limit is reached. Safe separation distances for emitters are calculated and distributed to all equipment users by the Navy as a routine operation. Updated information is distributed based on the introduction of new emitters, changes in emitters, and Navy specification changes. The Navy specification for radio frequency exposure was changed in 1995 (DOD 6055.11). As a result, new safe separation distances calculations were issued for emitters used by the Navy.

Many assumptions are made when presenting a theoretical safe separation distance. As an example, the values represented in the theoretical calculations (reiterated in figures D-2 through D-17) do not consider specific installations; actual transmitter output power, and variations in antenna gain, system losses, or empirical measurements. On-site RF surveys (such as those performed at the SWEF complex) or theoretical assessments specific to a site or installation will yield much lower safe separation distances because more variables used in the calculations are known (e.g., system losses and actual transmitter output power).

Table D-3 consolidates safe separation distances applicable to SWEF emitters and calculations unique to emitter installations at SWEF (operational safe separation distances). Each emitter is represented by its Navy nomenclature with associated elevation above the water, elevation and bearing transmission sectors, and safe separation distances in controlled and uncontrolled environments (both operational and worse case). SWEF unique safe separation distance calculations are based on the actual installation, present operations, and empirical data where available. The same information would be developed as part of the installation design for the proposed radar systems.

Figures D-2 through D-17 represent the emission profiles of these high power emitters. Depicted are the safe separation distances in the uncontrolled environment only. As mentioned earlier, the uncontrolled environment is the more stringent environment and therefore yields greater safe separation distances.

B.2 Hazards of Electromagnetic Radiation to Fuels (HERF)

During the handling and ventilation of the fuels such as JP-4 and automotive gasoline, it is possible for the mixture of fuel vapor and air to achieve a combustible concentration. This concentration could then be ignited if a spark were introduced by the presence of electromagnetic energy. The likely scenario creating this condition involves two metal objects in near contact or near ground, while exposed to a sufficiently strong electromagnetic field. Induced currents would cause an arc, which could in turn ignite the surrounding fuel vapor.

Table D-3. Operational Characteristics of Existing SWEF Radar (page 1 of 2)

SYSTEM	SAFE SEPARATION DISTANCES UNCONTROLLED ENVIRONMENT	*EMISSION SECTORS*		FREQUENCY AND POWER	
SWEF Radar Name Height above water used in calculation (ft)	*SWEF Radar (feet)*	*Approximate bearing (degrees true)*	*Approximate lower antenna elevation (degrees relative)*	*Frequency Band*	*Transmitter Maximum Power (Average)*
FCS MK 92 CAS-CWI (95 ft)	<173	142 - 92	0	J-BAND 10-20 GHZ	5000
FCS MK 92 CAS-Track (95 ft)	<87	142 - 92	0	I-BAND 8-10 GHZ	400
FCS MK 92 CAS Search (85 ft)	<1	360	+1.4	I-BAND 8-10 GHZ	1000
FCS MK 92 STIR-CWI (80 ft)	<462	151 - 257	0	J-BAND 10-20 GHZ	5000
FCS MK 92 STIR-Track (80 ft)	<190	151 - 257	0	I-BAND 8-10 GHZ	1000
MK 86 SPG-60 (65 ft)	<303	152 - 261	0	I-BAND 8-10 GHZ	825
MK 86 SPQ-9A (65 ft)	<1	360	0	I-BAND 8-10 GHZ	58
MK 74 MOD 14 (Tartar SM2/NTU)-CWI (65 ft)	<457	138 – 263	0	J-BAND 10-20 GHZ	1500
MK 74 MOD 14 (Tartar SM2/NTU)-Track (65 ft)	<465	138 – 263	0	G-BAND 5-6 GHZ	1600
MK 23 TAS (117 ft)	<2.5	117 - 269	0	D-BAND 1-2 GHZ	5600
MK 57 NSSMS Radar A (65 ft)	<321	137 - 255	0	J-BAND 10-20 GHZ	1800
MK 57 NSSMS Radar B (95 ft)	<321	117 - 260	0	J-BAND 10-20 GHZ	1800
Tartar MK 74 MOD 6/8/A/N/SPG-51C-Track (40 ft)	<486	133 - 184	0	G-BAND 4-6 GHZ	550
Tartar MK 74 MOD 6/8/A/N/SPG-51C-CWI (40 ft)	Is Not Operated Out Antenna	133 - 184	0	J-Band 10-20 GHZ	0
AN/SPQ-9B (70 ft)	<1	360	0	I-BAND 8-10 GHZ	300
FCS MK 99 (65 ft)	<1320	360	+5	J-BAND 10-20 GHZ	12000

Table D-3. Operational Characteristics of SWEF Radar (page 2 of 2)

SWEF Emitter Name	*Antenna Gain*	*System Loss (Gain) includes Coupling Factor Loss*	*Power used in Calculation*	*Comments*
FCS MK 92 CAS-CWI	35.5	8.73	5000	
FCS MK 92 CAS-Track	35	4	400	
FCS MK 92 CAS Search	35	3	1000	Rotating system Duty cycle = 0.0039
FCS MK 92 STIR-CWI	42	6.52	5000	
FCS MK 92 STIR-Track	41.5	7	1000	
MK 86 SPG-60	41	2.2	825	
MK 86 SPQ-9A	37.5	0	57.6	Rotating system Duty cycle = 0.0042
MK 74 MOD 14 (Tartar SM2/NTU)-CWI	42.5	1.82	1500 (Reduced from report)	
MK 74 MOD 14 (Tartar SM2/NTU)-Track	39.6	2.27	1600 (Reduced from report)	
MK 23 TAS	21	0	5600	Rotating system Duty cycle = 0.0092
MK 57 NSSMS Radar A	36.5	0	1800	
MK 57 NSSMS Radar B	36.5	0	1800	
Tartar MK 74 MOD 6/8/A/N/SPG-51C-Track	39.5	(1.87)	550	
Tartar MK 74 MOD 6/8/A/N/SPG-51C-CWI	45	0.68	4000	
AN/SPQ-9B	43	0	300	Rotating system Duty cycle = 0.0042
FCS MK 99	43	2.48	12000	

Note: Losses were adjusted based on the empirical measurement (if data was available). If no measurement data was available or used, the loss was set to zero, which yields a worse case value for safe separation distances (i.e., SPQ-9A, SPQ-9B, TAS, MK 57).

Figure D-2. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 92 CAS Search With Emission Sectors (Uncontrolled "Public" Environment)

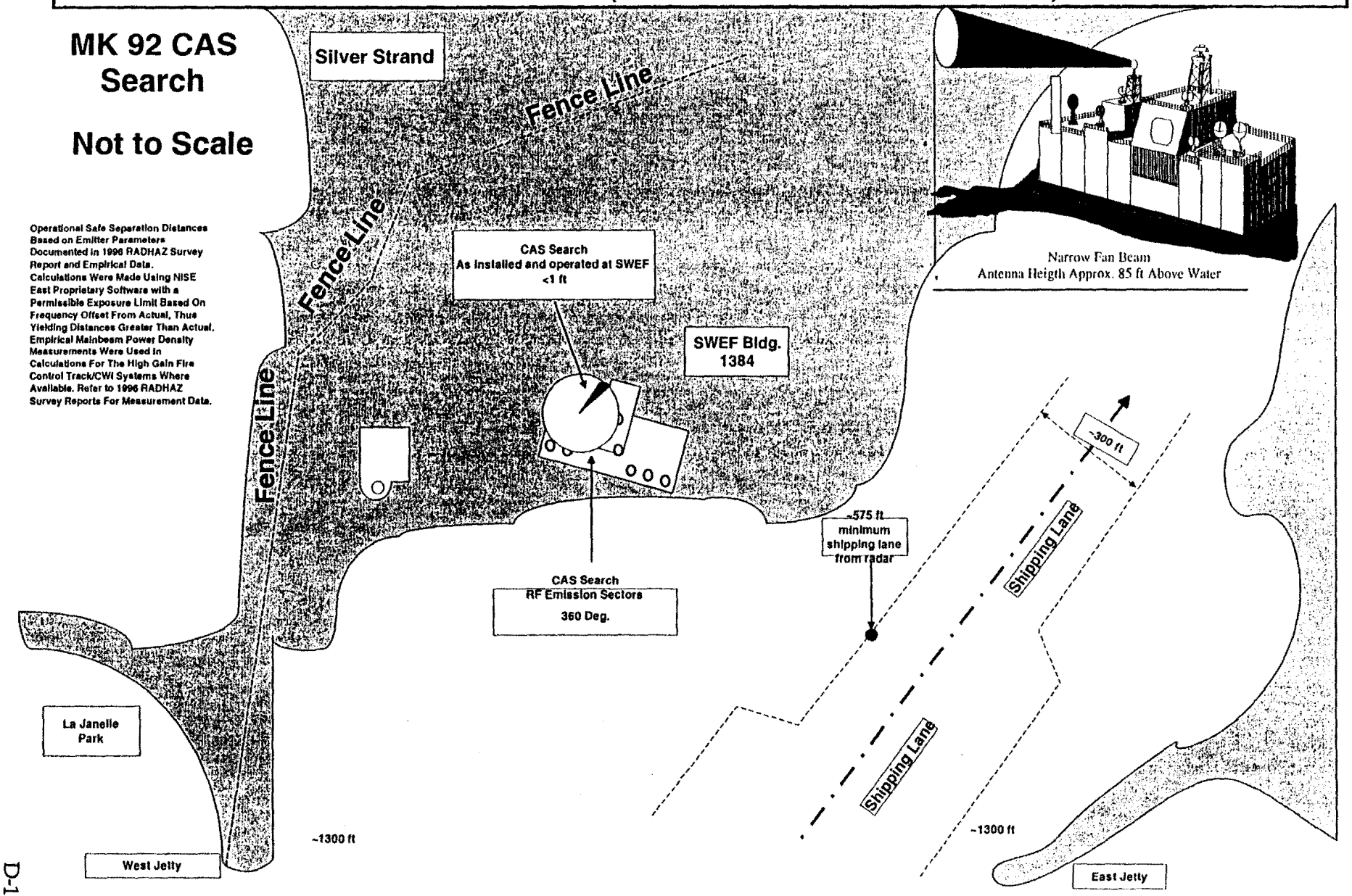


Figure D-3. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 92 CAS CWI With Emission Sectors (Uncontrolled "Public" Environment)

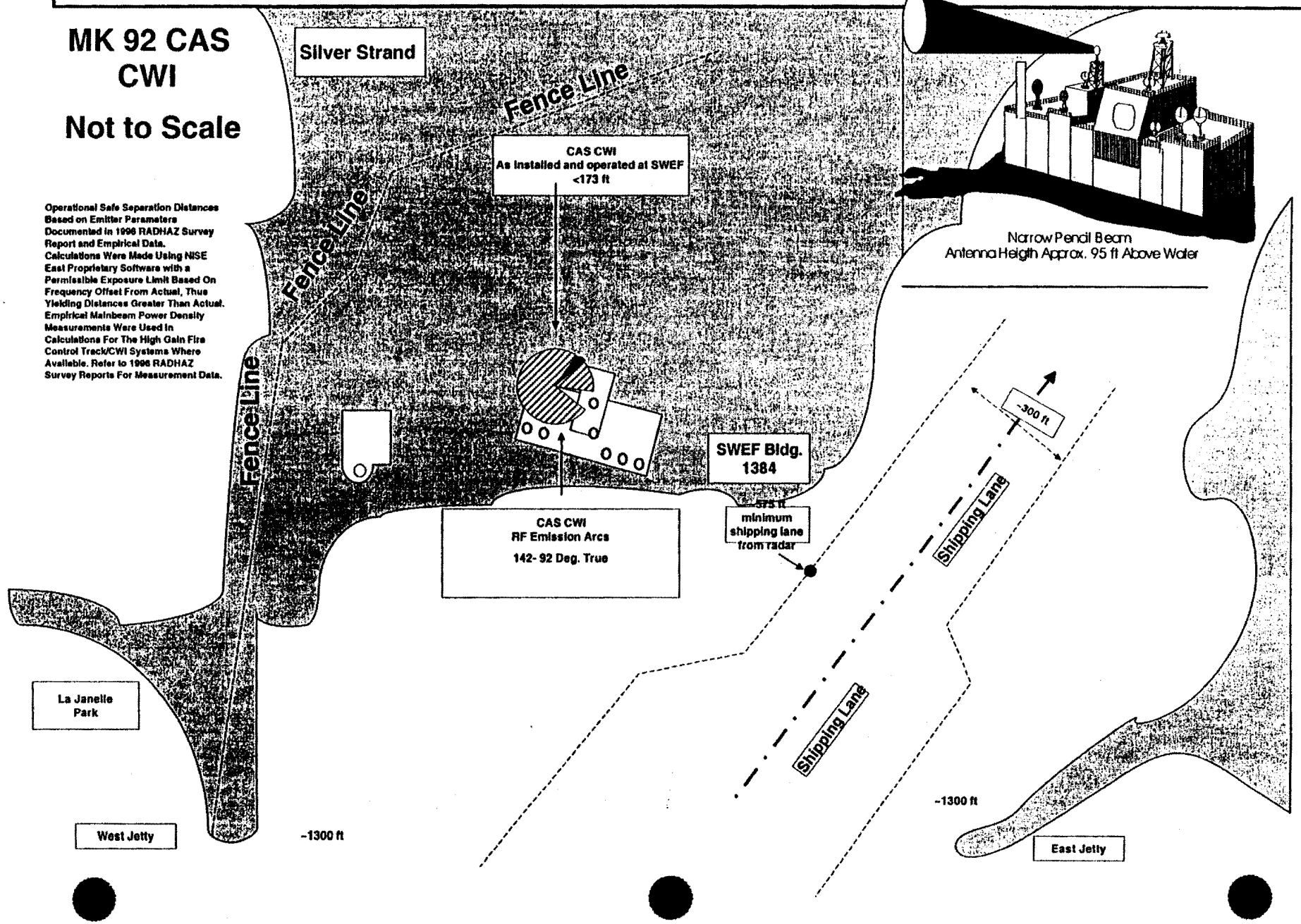


Figure D-4. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 92 CAS Track With Emission Sectors (Uncontrolled "Public" Environment)

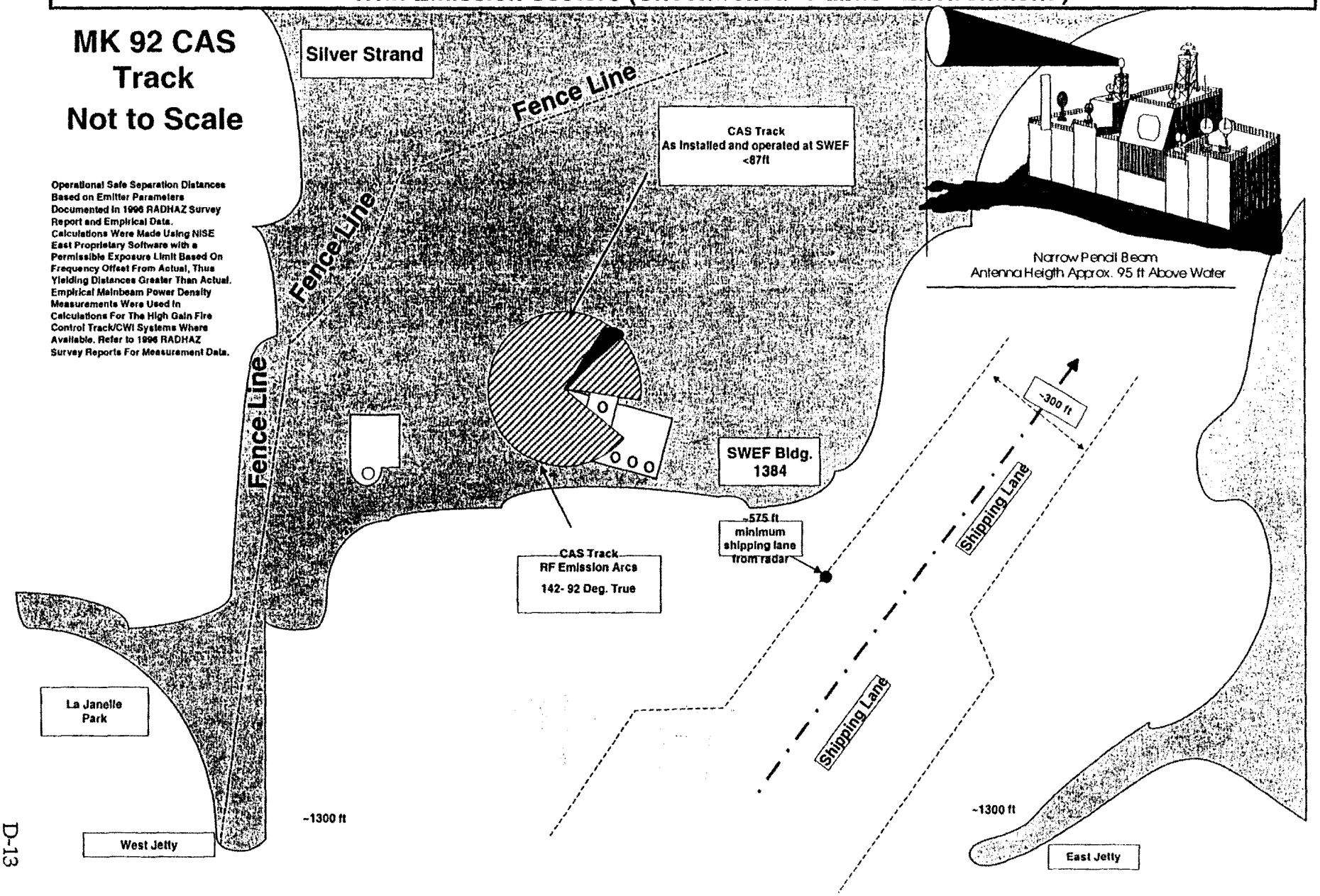


Figure D-5. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 92 STIR Track With Emission Sectors (Uncontrolled "Public" Environment)

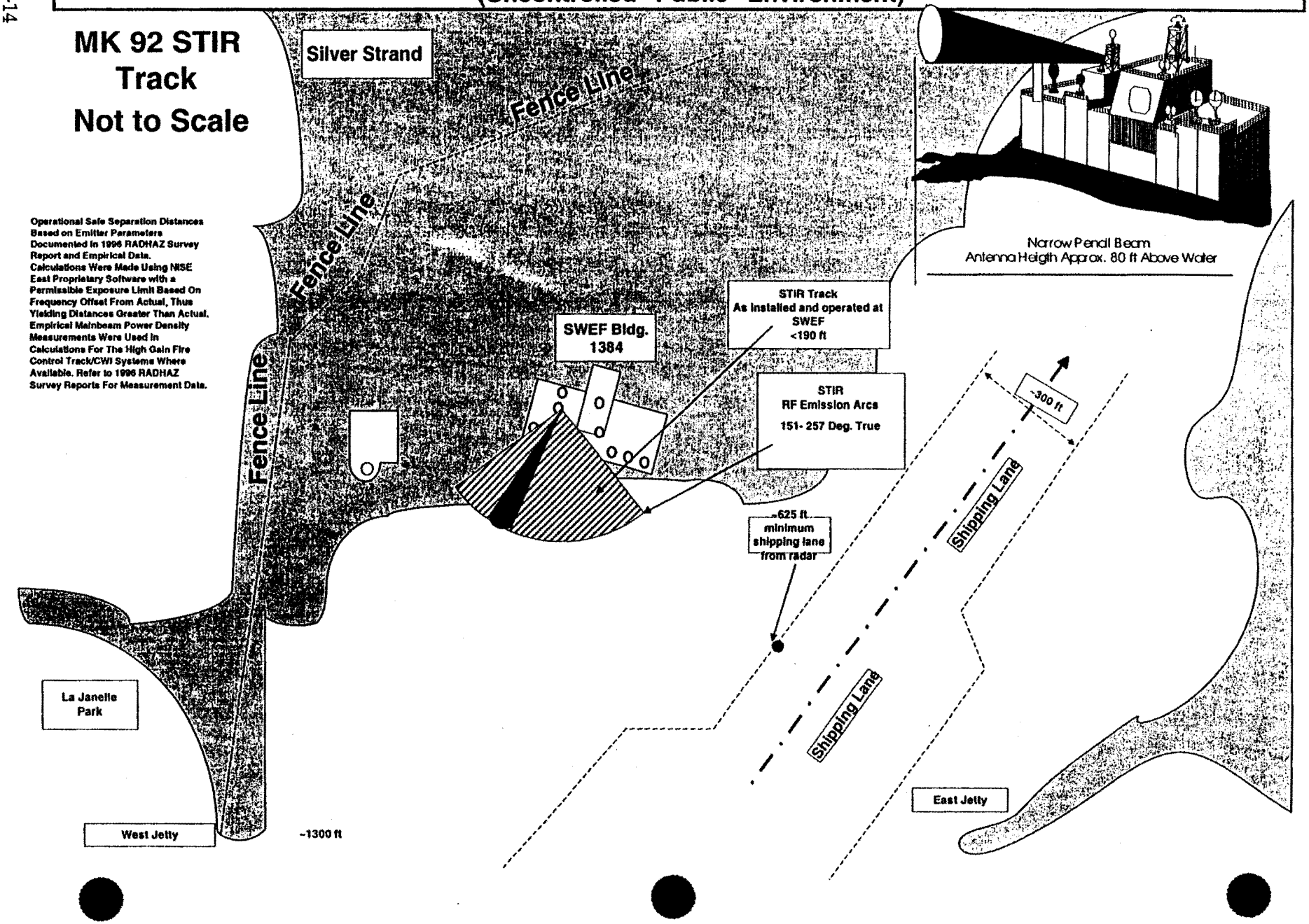


Figure D-6. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 92 STIR CWI With Emission Sector (Uncontrolled "Public" Environment)

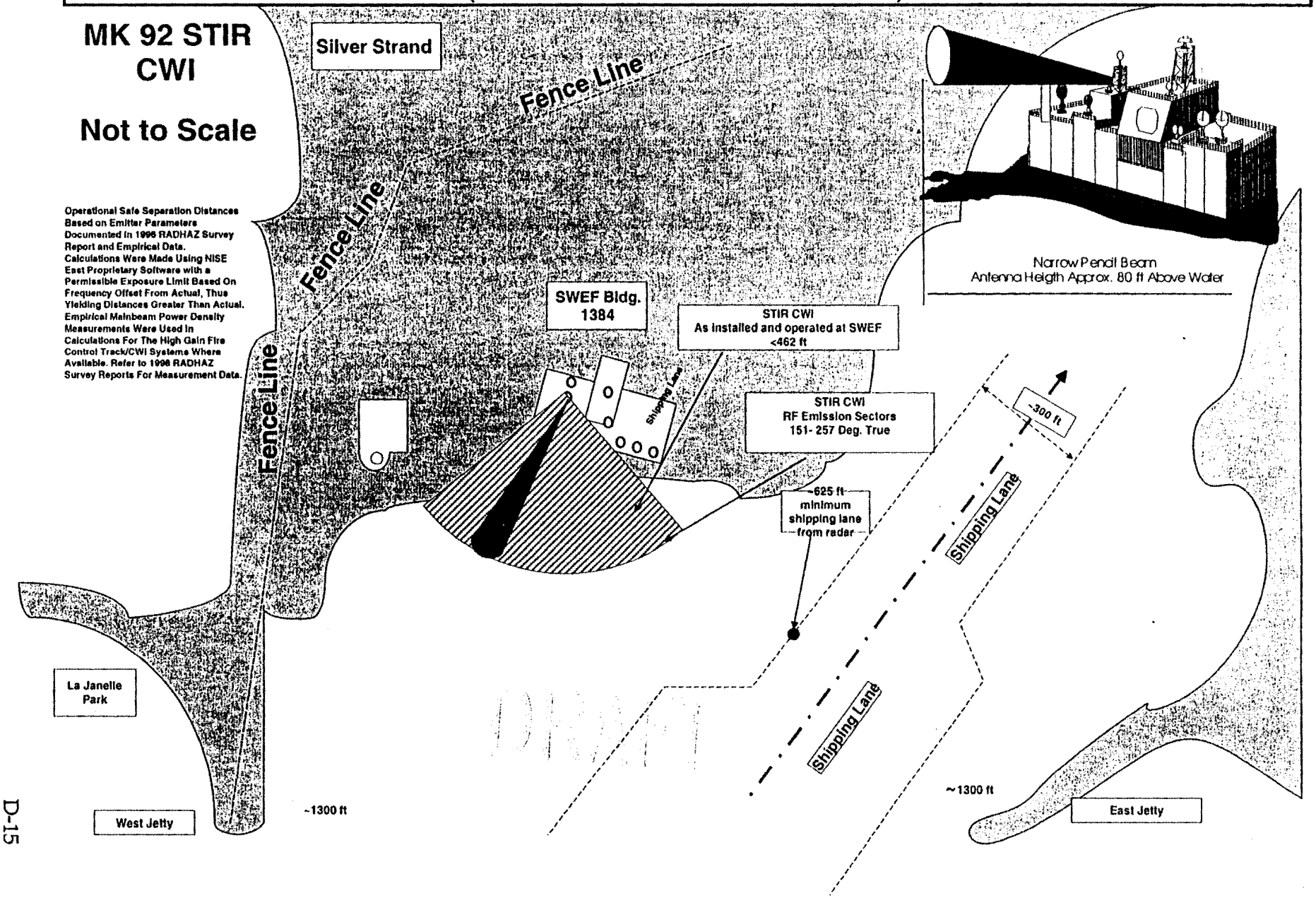


Figure D-7. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 99 Illuminator With Emission Sectors (Uncontrolled "Public" Environment)

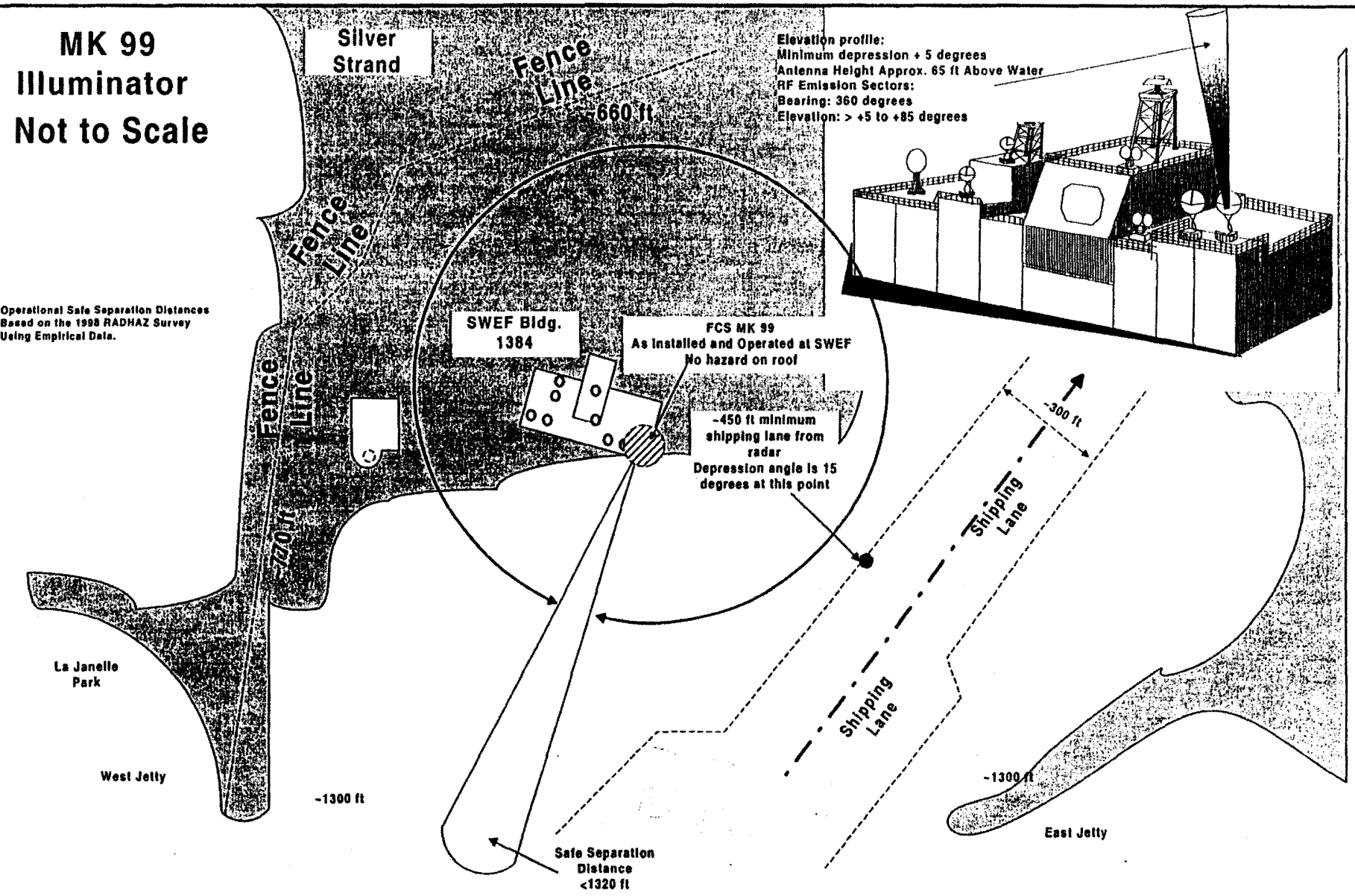


Figure D-8
MK 74 MOD 14 Track
Not to Scale

Operational Safe Separation Distances Based on Emitter Parameters Documented in 1996 RADHAZ Survey Report and Empirical Data. Calculations Were Made Using NISE East Proprietary Software with a Permissible Exposure Limit Based On Frequency Offset From Actual, Thus Yielding Distances Greater Than Actual. Empirical Mainbeam Power Density Measurements Were Used In Calculations For The High Gain Fire Control Track/CWI Systems Where Available. Refer to 1996 RADHAZ Survey Reports For Measurement Data. Since the survey was complected, the MK 74 track power was reduced to 1600 watts.

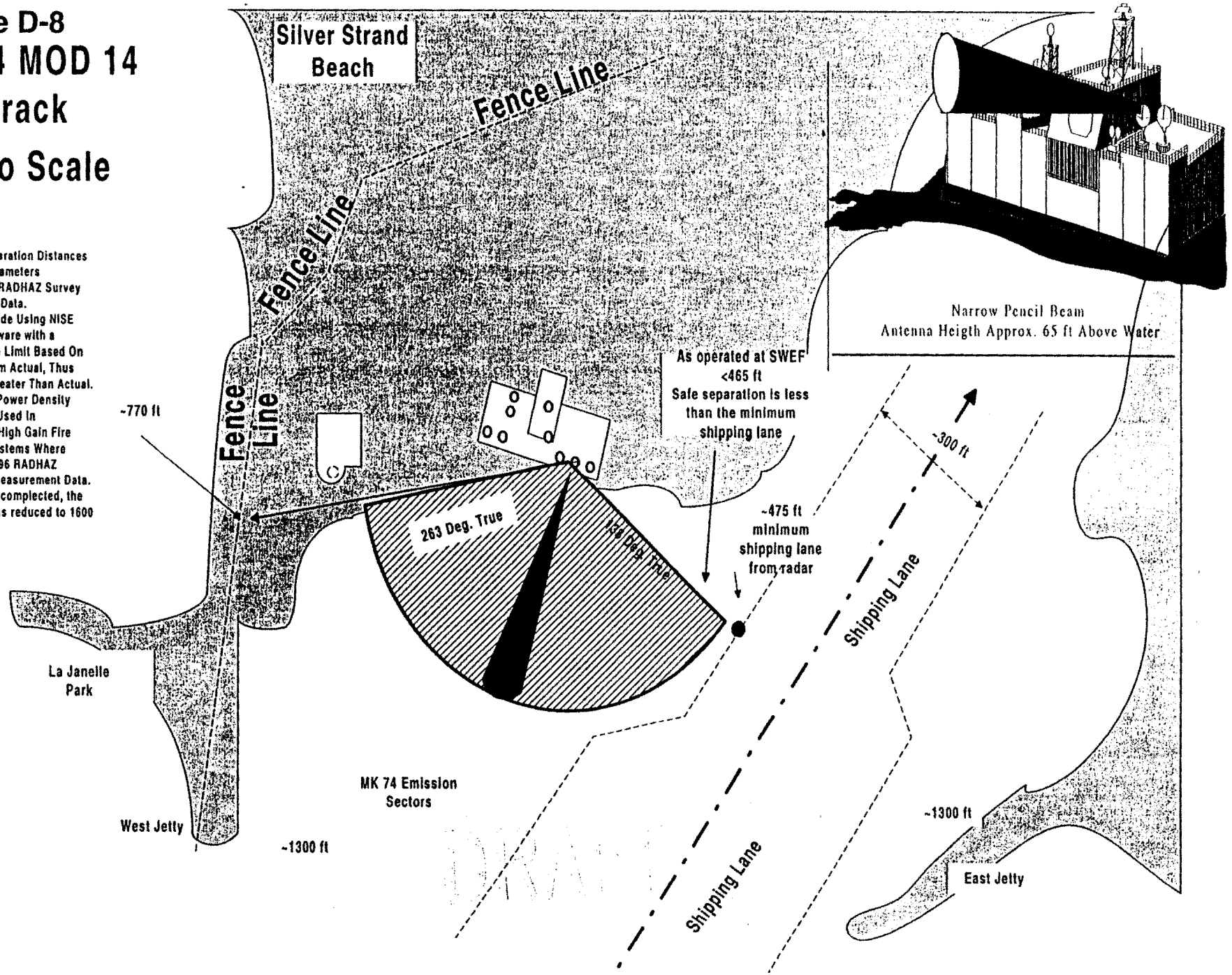


Figure D-9. Operational Safe Separation Distances for SWEF Building 1384 Shown for TARTAR Fire Control System MK 74 MOD 14 (TARTAR SM2/NTU) CWI With Emission Sectors (Uncontrolled "Public" Environment)

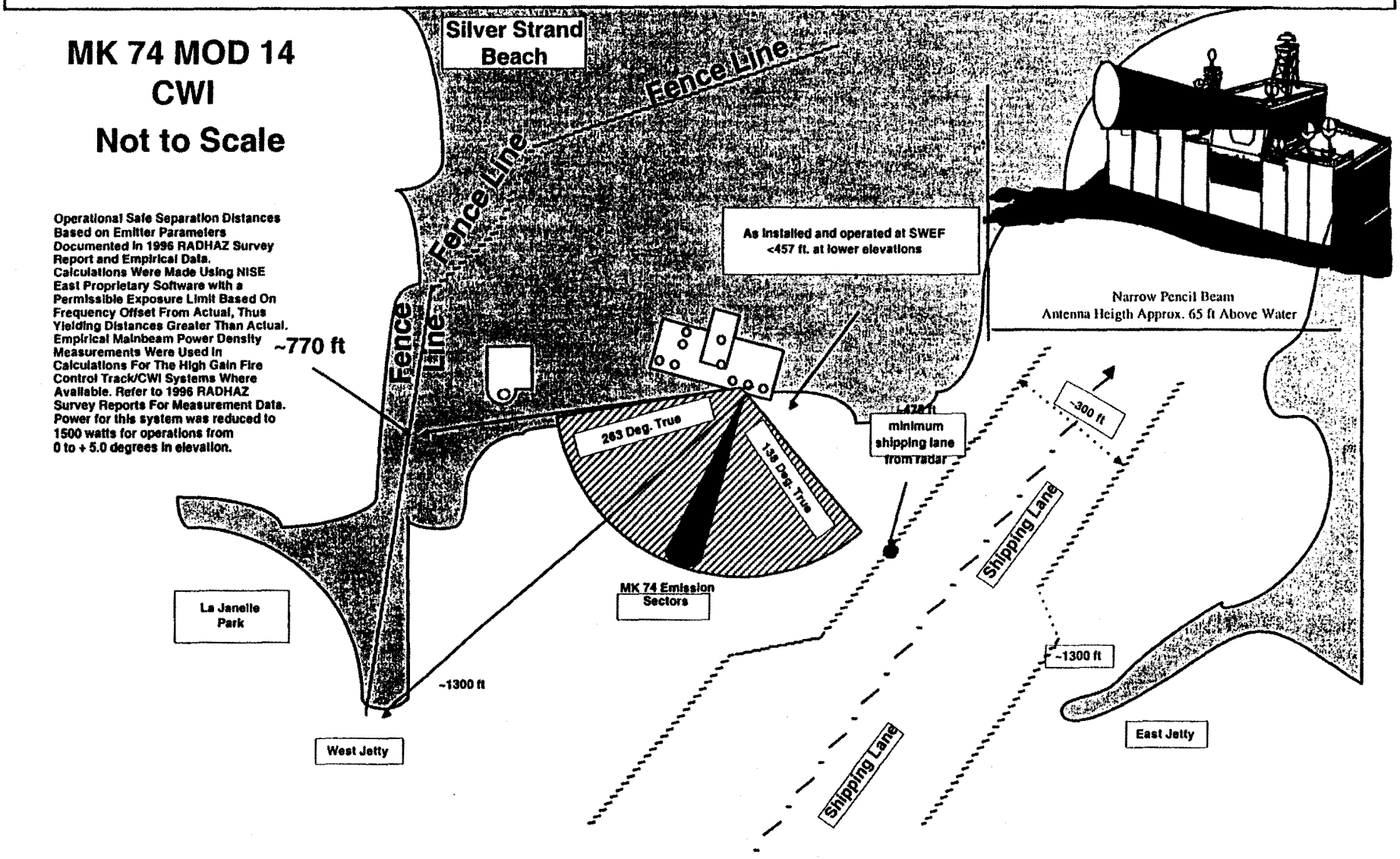


Figure D-10. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 86 AN/SPG-60 With Emission Sectors (Uncontrolled "Public" Environment)

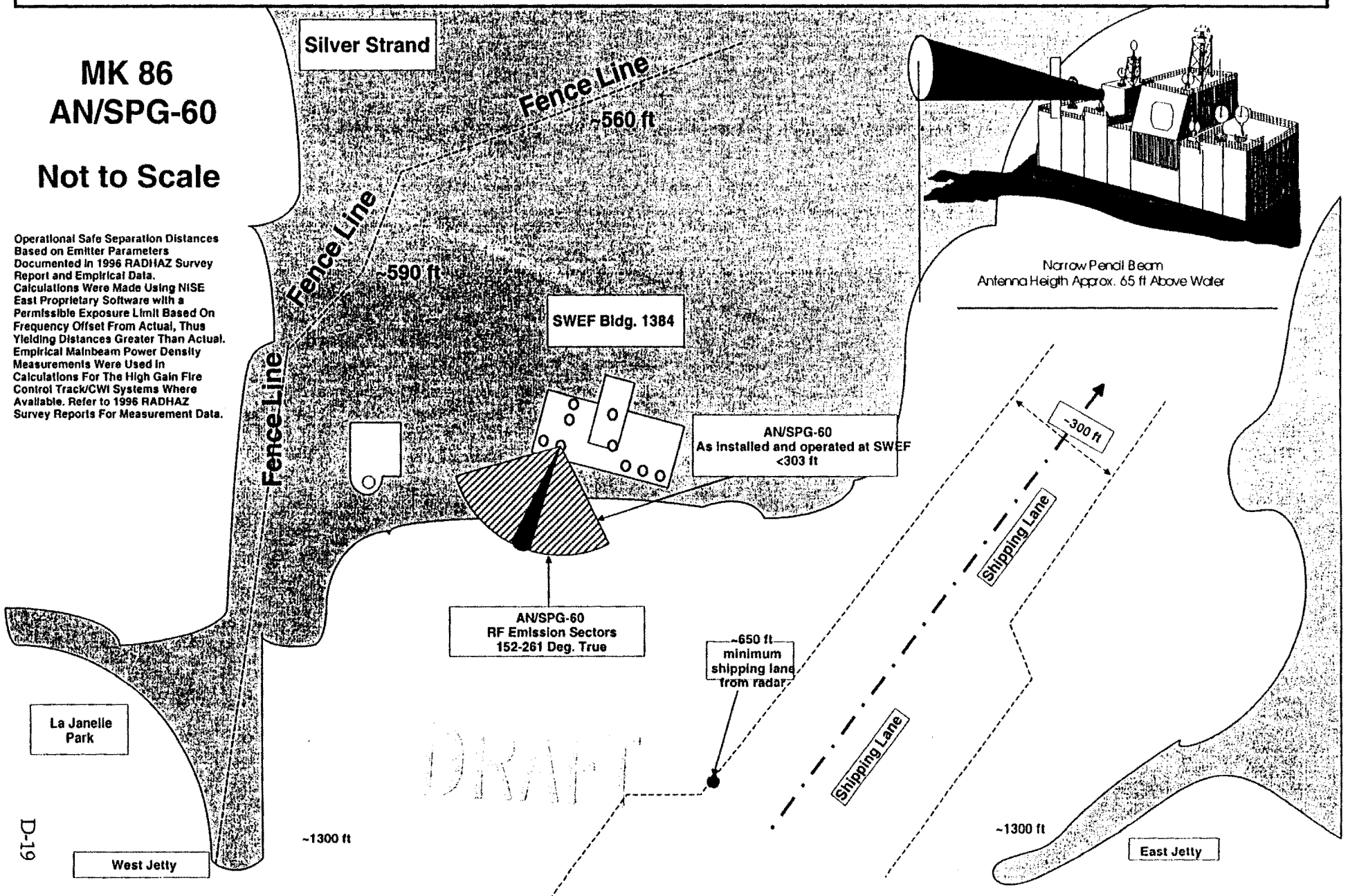


Figure D-11. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System AN/SPQ-9B With Emission Sectors (Uncontrolled "Public" Environment)

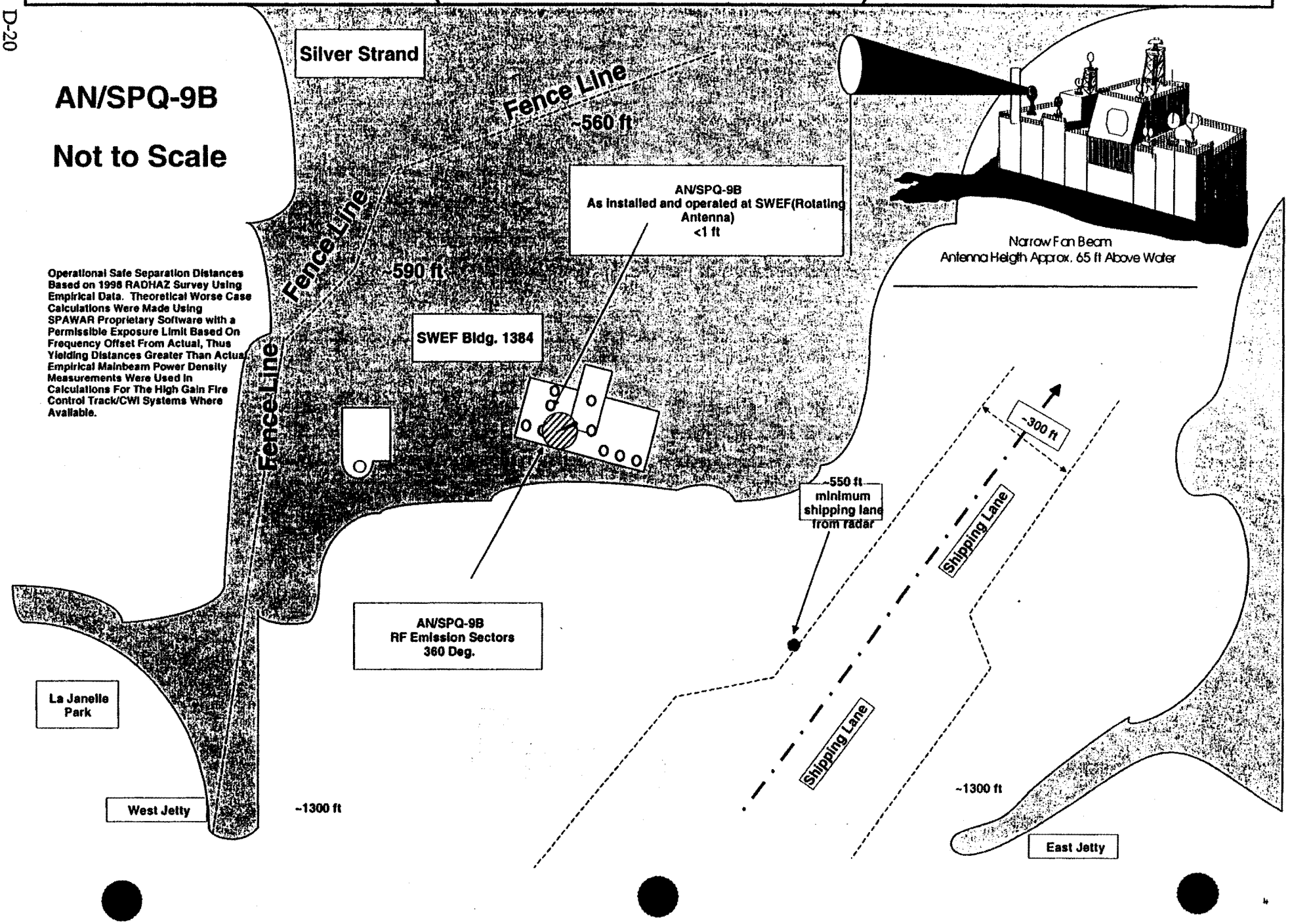


Figure D-12. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 86 AN/SPQ-9A With Emission Sectors (Uncontrolled "Public" Environment)

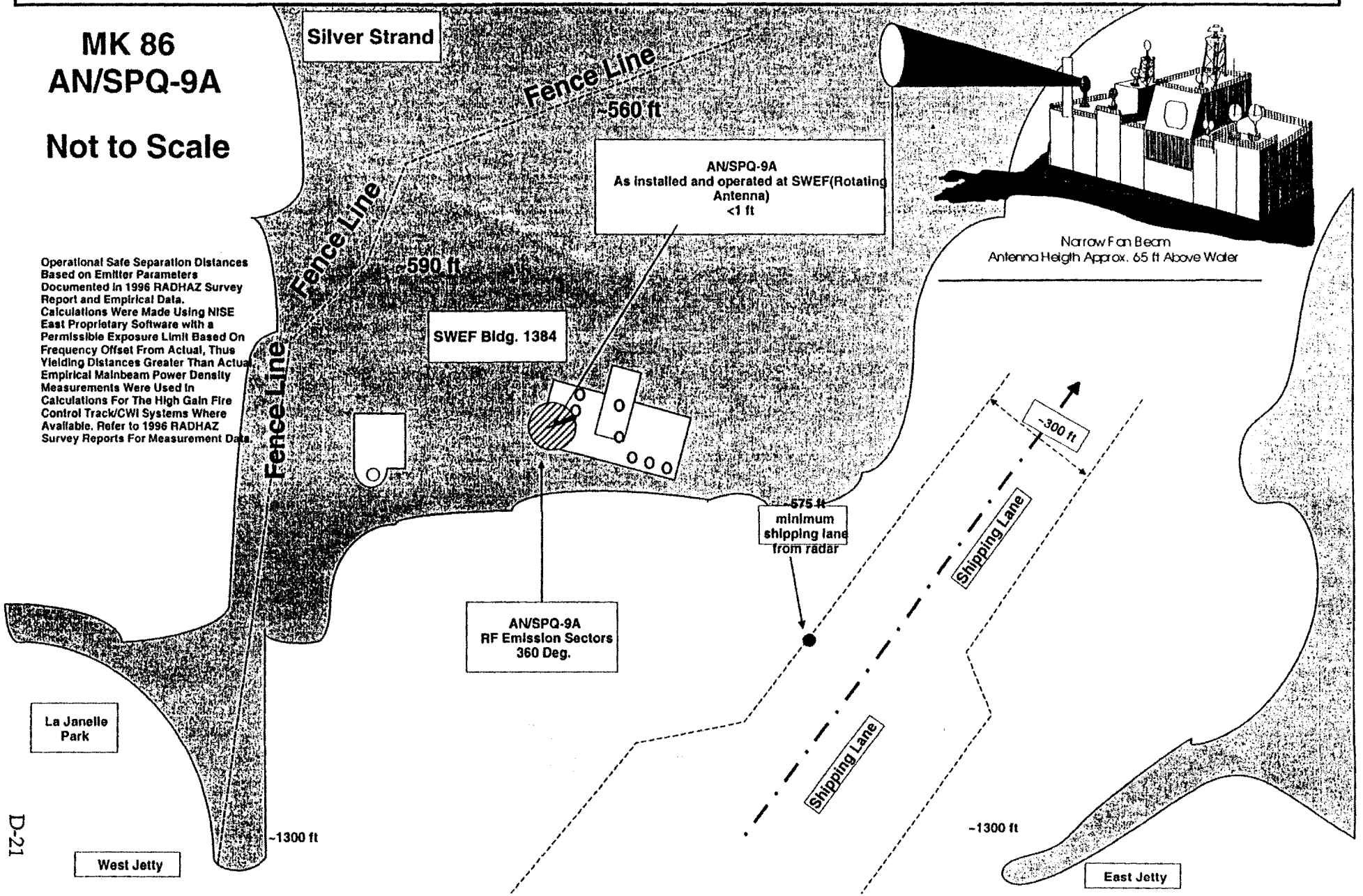


Figure D-13. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 23 TAS With Emission Sectors (Uncontrolled "Public" Environment)

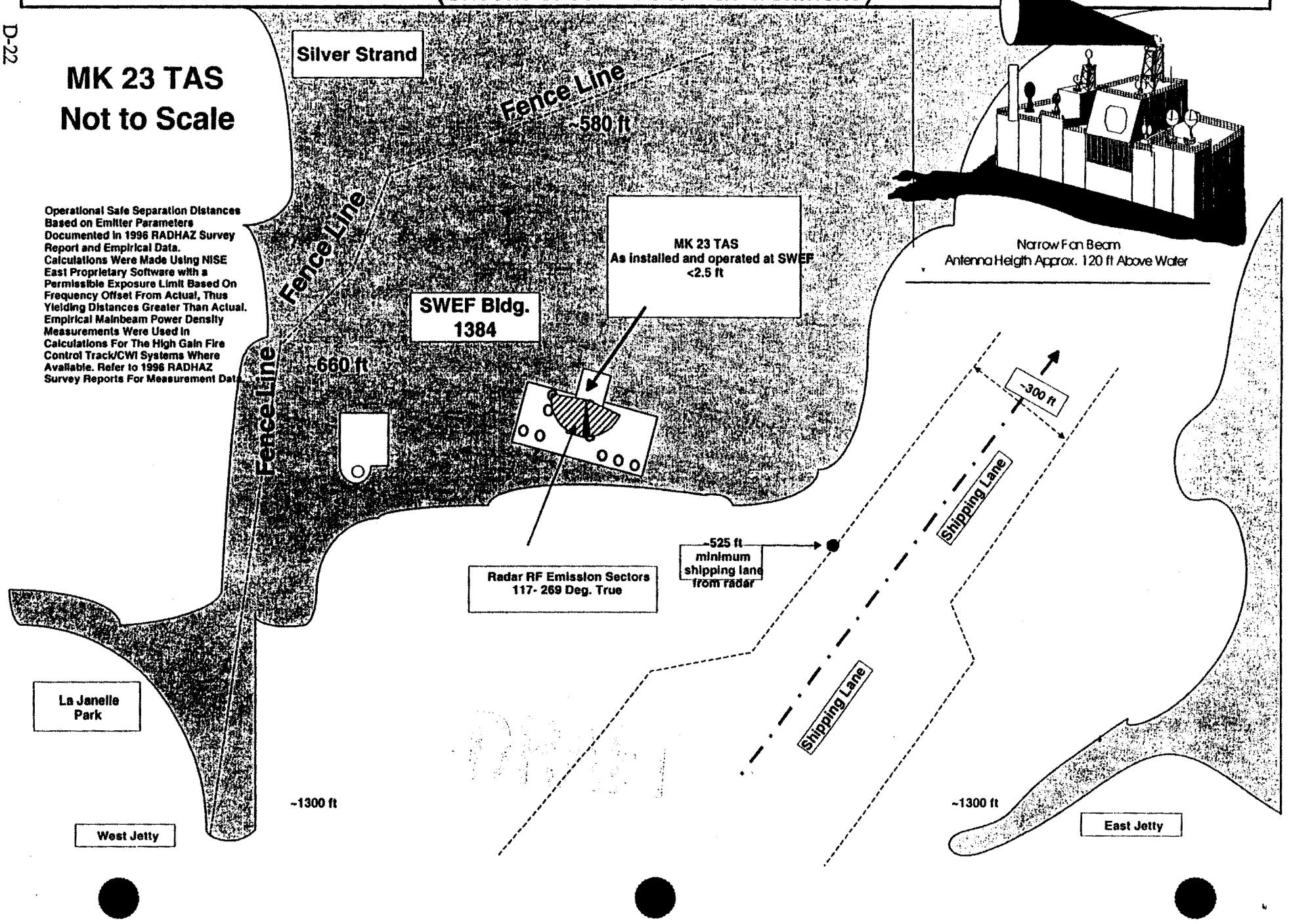


Figure D-14. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 57 Mod 3 NSSMS Radar A With Emission Sectors (Uncontrolled "Public" Environment)

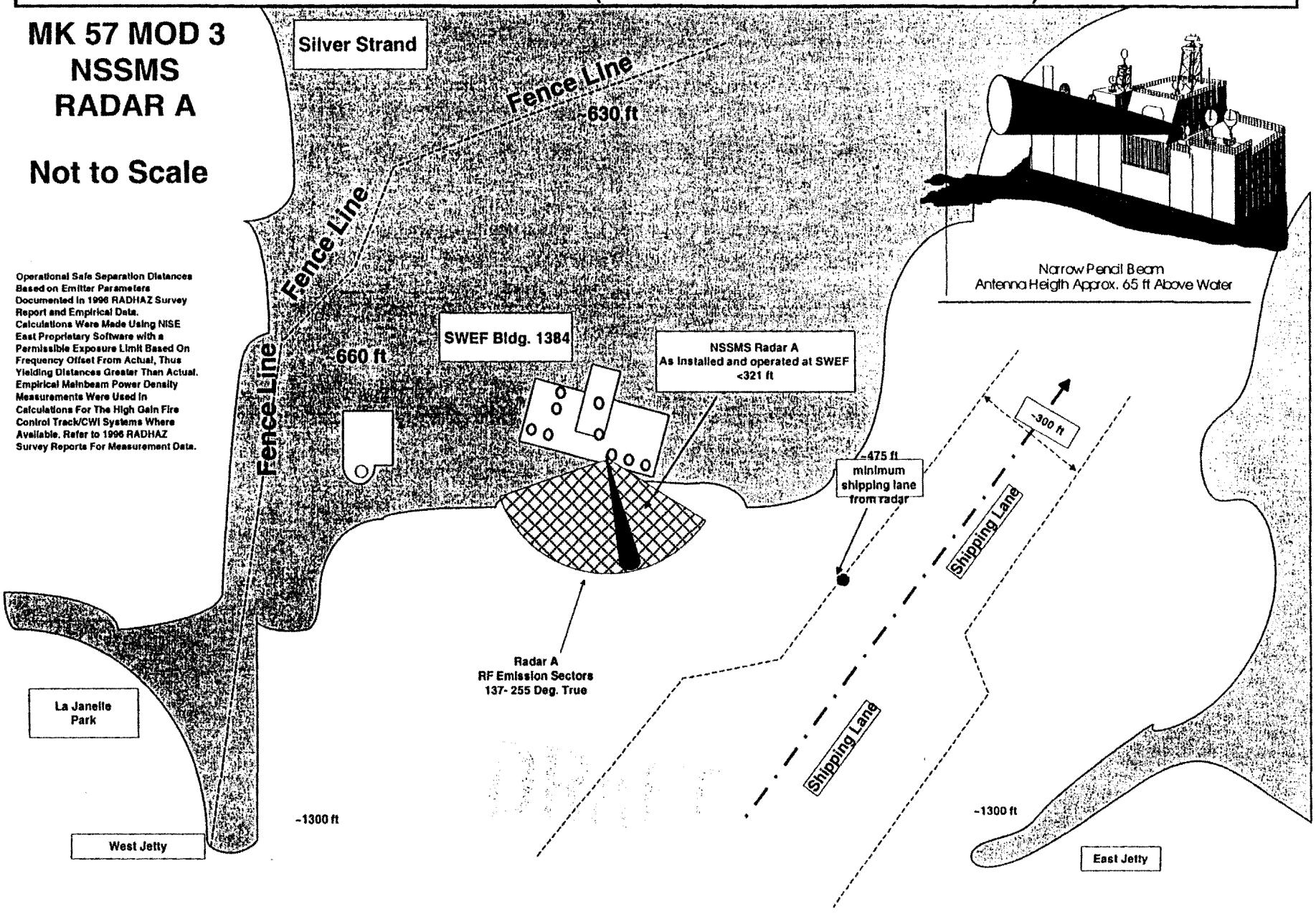


Figure D-15. Operational Safe Separation Distances for SWEF Building 1384 Shown for Fire Control System MK 57 Mod 3 NSSMS Radar B With Emission Sectors (Uncontrolled "Public" Environment)

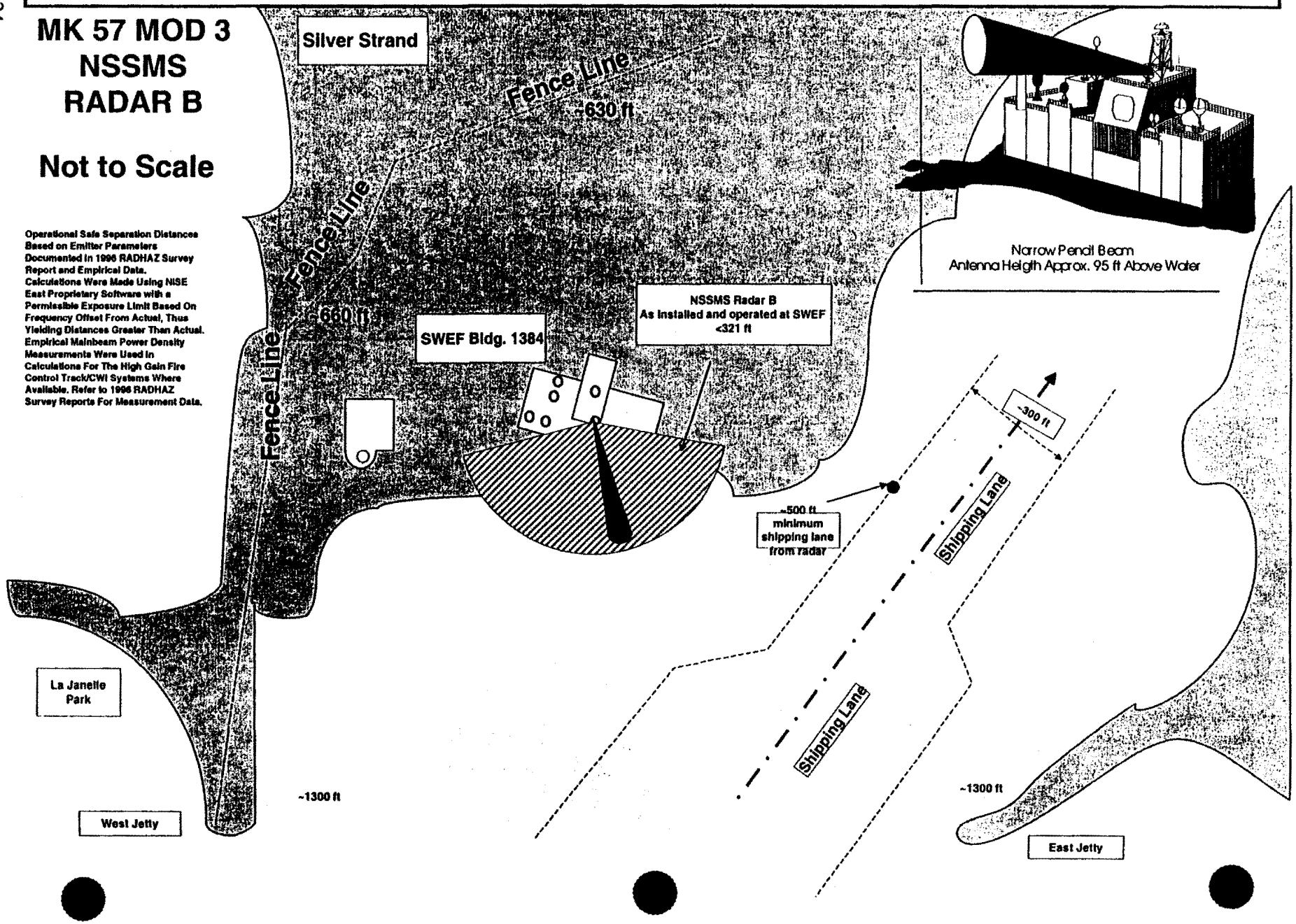


Figure D-16. Operational Safe Separation Distances for SWEF Building 5186 Shown for TARTAR Fire Control System MK 74 MOD 6/8/A/N/SPG-51C Track With Emission Sectors (Uncontrolled "Public" Environment)

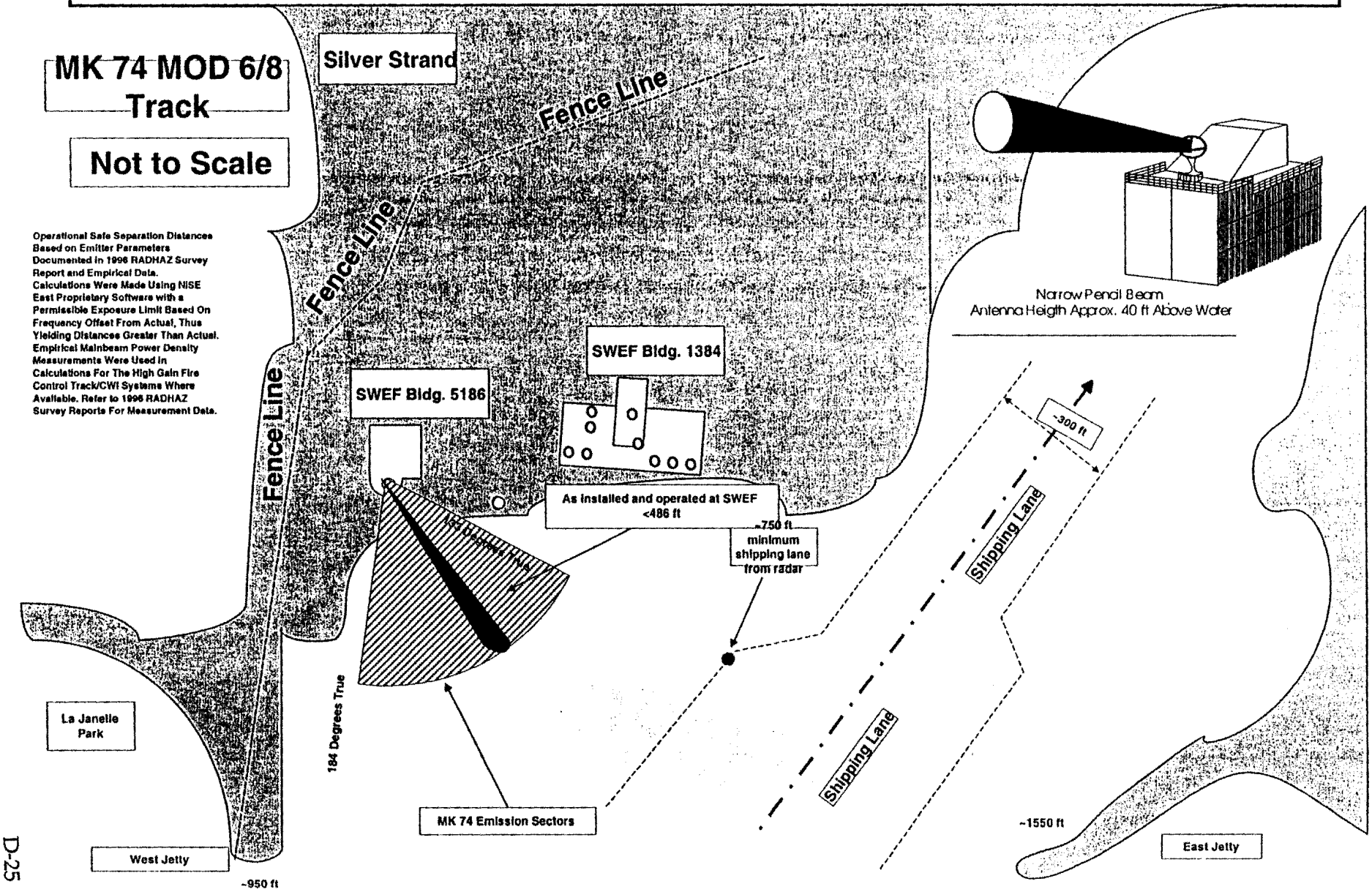
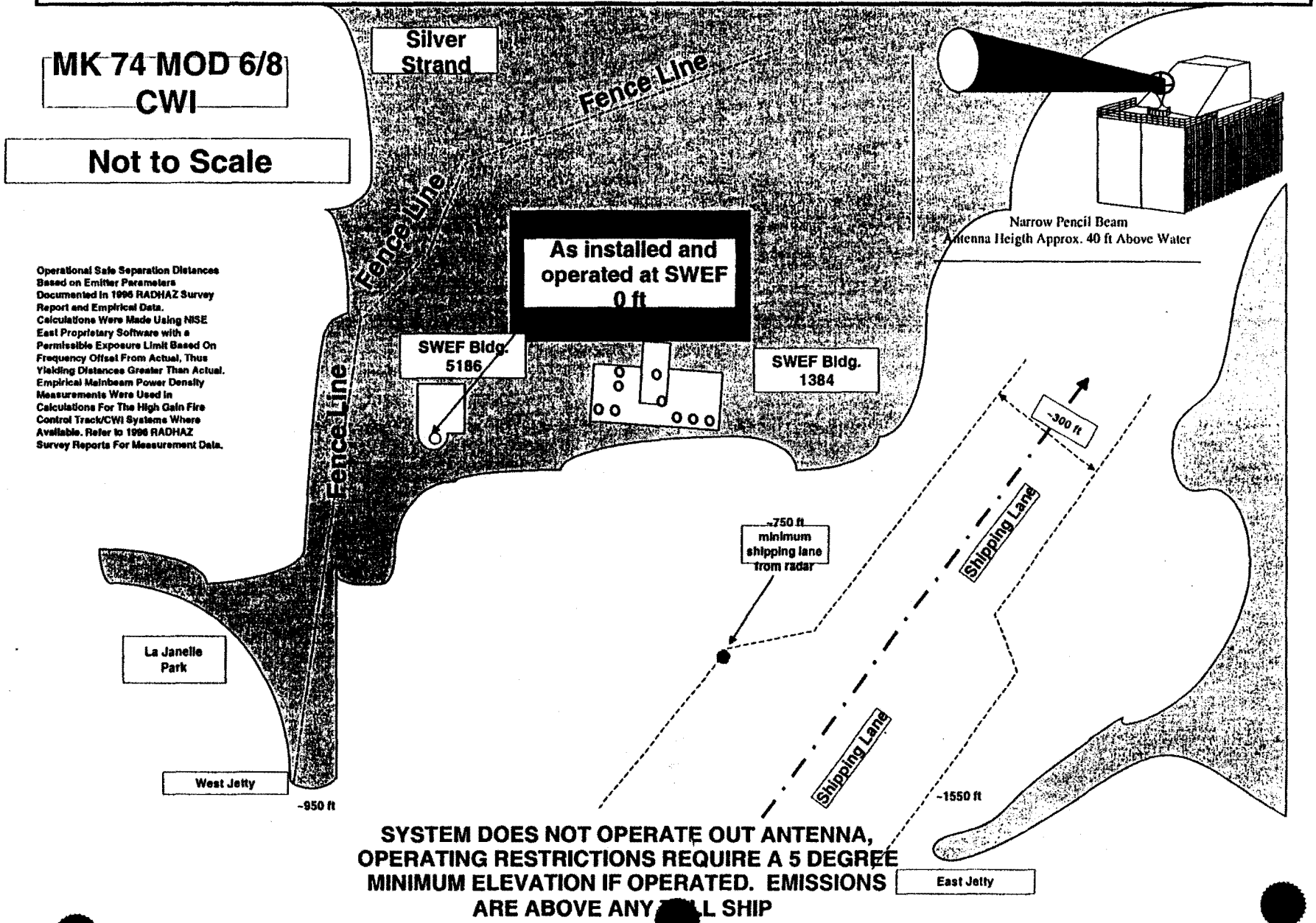


Figure D-17. Operational Safe Separation Distances for SWEF Building 5186 Shown for TARTAR Fire Control System MK 74 MOD 6/8/A/N/SPG-51C CWI With Emission Sectors (Uncontrolled "Public" Environment)



The Beacon Foundation
Box 352
3844 Channel Islands Blvd
Oxnard, CA 93035
A Nonprofit Public Benefit Corporation

Mr. Mark Delaplaine
Federal Consistency Supervisor
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

March 2, 2000

Re: CD-75-99 Consistency Determination, U.S. Navy, Virtual Test Capablity (VTC), Surface Warfare Engineering Facility (SWEF) Port Hueneme

Dear Mark,

On September 14, 1999, the Commission unanimously declined to concur in the above referred consistency determination due to the lack of adequate information. Your staff report noted the need, among other things, to complete the technical panel review regarding potential coastal zone impacts of RF from existing SWEF operations.

In addition to RF impacts, the VTC doubling of aircraft and vessel manuvers may significantly impact resources under the protection of the California Coastal Commission including recreational fishing and boating, beach use, commercial fishing, harbors and wildlife. The title "Virtual Test Capability" does not describe this project. The aircraft utilized are not "virtual" ... they are all too real. The internal Navy name for this project, "Synthetic Sea Range, " is more apt. (1)

The impact and intent of this proposal mirrors a previous Military Operations Area (MOA) and Special Use Airspace (SUA) proposal. In April 1996 the Commission reversed a prior concurrence, and required a full new consistency determination for that proposal and in May, 1996 the Navy withdrew it from consideration "at this time"(2) The "Virtual Test" proposal drops the formal request for dedication of a new Military Operations Area to join the SWEF to the 36,000 square mile Mugu Sea Test Range. It accomplishes the same linkage via an air bridge into the Santa Barbara Channel and to the SWEF. Quoting the July 14, 1999 Navy consistency determination filing, the VTC proposal will (page 5) "enhance and expand SWEF capabilities...." and these include (page 2) taking advantage of "line-of-sight flight paths to the building."

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(1) See attached Navy e-mail exchange of 6/16/99 and 6/17/99 obtained pursuant to a FOIA.

(2) See attached Navy press release of 5/24/96.

EXHIBIT NO. 20
APPLICATION NO.
CD-4-00

The Commission has received sketchy and incomplete information concerning the VTC proposal via the July 14, 1999 consistency determination filing and a letter to you dated 17 August 99. Additional information is needed. Prior to further Commission consideration of this proposal we suggest you request additional facts from the Navy in at least the following areas:

1. Aircraft Operations.

(a) Definition of an "Event." The filing says the proposal involves "10 additional events" but "events" are not further defined Additional information is needed including:

1. How many aircraft may be allowed in each event?

2. How many passes may be allowed per event?

3. What is the flight pattern for events including:

- Minimum Altitudes.
- Maximum Speeds.
- Diagram of flight profile including starting point, direction, end point, manuvers, and altitudes.
- Minimum distance from mainland surface and shore at the closest point.
- Will there be overflight of any part of the Channel Islands National Park? What will be the closest distance and lowest altitude of approach to the Park?
- Will there be overflight of any part of the Channel Islands National Marine Sanctuary? What will be the closest distance and lowest altitude of approach to the Sanctuary boundaries?
- Will there be overflight of the Santa Barbara Channel traffic lanes for coastwise north or south bound freighters?

- What, if any, limit is there on the number or percentage of the "Events" that could be conducted in whole or in part outside the Sea Test Range and nearer to the SWEF?

(b) Types of Aircraft to be utilized. The consistency determination filing refers (page 14) to use of Cessna aircraft, helicopters and to "Jet aircraft, primarily Lear Jets being employed. The types of helicopters utilized need to be provided and if any jet aircraft other than Lear jets are allowed, they need to be specified.

(c) Human and wildlife safety. The consistency determination (page 15) dismisses bird strike potential by indicating that Lear jets will fly at "altitudes of 100 to 6000 feet above the ocean surface", that they "generally fly at 200 knots, and pilots watch for birds to avoid strikes that could damage aircraft." Low altitude Lear jet flights in this same intense wildlife area were a very serious FAA concern regarding the SUA/MOA proposal (3). The same safety and wildlife concerns apply to the present proposal and create a need for the following information:

- Has the VTC proposal been submitted to the FAA for comment or approval? If so, when? If any FAA comments or approvals have been received a copy should be provided to the Commission

- Will FAA waivers be sought for operations below minimum altitudes specified in FAA regulations (i.e. 21 CFR 91.111).

- Will any "events" be permitted at night or in less than VFR conditions?

- Will aircraft and pilots be military or contracted?

(3) See attached FAA Memorandum dated 4/4/96 that is part of its docket for the SUA/MOA proposal.

- Will aircraft be modified by the addition of special electronic gear? If so will the FAA certify the modifications prior to flight? (4)

- When Lear jets are utilized will a third person acting as a flight safety visual observer for birds, boats, weather and other hazards be on board at all times in addition to the two pilots? (5)

- What is the single event noise level at the closest surface distance around and below the aircraft.

- The consistency determination filing states (page 4) that operations will "primarily be in the Sea Test Range" yet in its letter to you of 17 August 99 the Navy says "The nearest distance to shore that flights can occur is 2000 feet." These answers create ambiguity as to near shore flights. Are there in fact any restrictions on the number of new proposed "events" conducted in whole or in part outside the Mugu SeaTest Range?

2. Consistency Determination for "Current" Operations

- Was a consistency determination ever filed for the aircraft operations listed as "current" operations in Table 1 of the VTC consistency determination filing? If not, an after the fact filing should now be requested . The Navy may not properly gain "backdoor" approval of "current" operations by their mere mention in the filing for "proposed" additive aircraft and boat operations.

---

(4) See attached 2/27/96 National Transportation Safety Board report on the 12/14/94 crash of a Lear Jet specially modified with electronic gear. At the time of the accident the Lear Jet was operating under a military contract.

(5) See attached FAA memorandum dated 4/4/96 description of the need for this precaution.

- Will the addition of the new "projected" events potentially result in a change of the manner in which the "current" events are conducted including the number that may be conducted outside the Mugu Sea Test Range?

3. Capabilities of Radar Emitters.

(a) Two new "surface/ air search radar" systems would be added in the FY2002-2004 time period (page 3). Radiation operational data on these devices at the SWEF must be provided with specification of testing conditions and results. The testing results are not yet known. Therefore, a consistency determination for these devices is premature and should not even be considered until all data is is available and provided.

(b) The consistency determination filing states (page 3) that the "Aegis Spy 1-A would be installed at the SWEF including a transmitter, waveguide and antenna" but that it "would not radiate out of the antenna or outside the building." Complete information on the operating characteristics of this system needs to be provided including its use under limited or controlled conditions including passive tracking of airborne and surface targets.

(c) The focus of the proposed action is on surface missile scenarios. In order to track low altitude targets beyond the horizon the emitters at the SWEF would need to dip below the 0-degree limit now said to apply in the SWEF Standard Operating Procedure said (page 9) to provide "specific guidance for the safe installation and operation of equipment and systems at the SWEF complex." Information is needed on how the proposed action action would change the azimuth, bearing, peak power level and hazard zones of existing devices.

In addition to requesting your consideration of these questions, we suggest that you revisit your staff memo of March 20, 1996 regarding the Special Use Airspace/ Military Operations Area proposal. A review of that memo gives an appreciation for similarities of the present "Synthetic Sea Range" proposal to the prior one. Your memo touches on some of the same coastal zone impact issues raised in our above questions and also suggests additional areas of potential Coastal Commission concern.

Sincerely yours,
For The Beacon Foundation

Vickie Finan
President

Enclosures.

Pringle, Gail L (CBCPH)

From: Stone, Alex [StoneAM@navair.navy.mil]
Sent: Thursday, June 17, 1999 4:53 PM
To: 'Pringle, Gail'; 'Chuck Hogle'
Subject: FW: SWEF

Gail/Chuck - looks like we could just sent NMFS some data, maybe the CD or possibly the whole EA or something else...whatever you like. Send it to:

National Marine Fisheries Service, Southwest Region
Attn: Christina Fahy
501 W. Ocean Blvd, Suite 4200
Long Beach, CA 90802-4213

Thanks,
ALEX

-----Original Message-----
From: Christina Fahy [mailto:Christina.Fahy@noaa.gov]
<mailto:[mailto:Christina.Fahy@noaa.gov]>
Sent: Thursday, June 17, 1999 9:15 AM
To: StoneAM@navair.navy.mil <mailto:StoneAM@navair.navy.mil>
Subject: Re: SWEF

Hi Alex - I'd prefer that you have them send me the summary. That way I can look it over, and if I have questions, comments, etc., I can meet/talk with you all then. Let me know if you need my address. Good to hear from you - hope all is going well.
Tina

_____ Reply Separator

Subject: SWEF
Author: StoneAM@navair.navy.mil <mailto:StoneAM@navair.navy.mil> at EXTERNAL
Date: 6/16/1999 7:48 PM

Tina,
Hi from Alex Stone at Point Mugu. Hope you're doing well. My colleagues at neighboring Navy base, the Port Hueneme Division Naval Surface Warfare Center (PHD NSWC) at Port Hueneme, asked me (as the local Navy marine mammal guy) to contact you regarding an upcoming project. PHD is proposing to enhance the capabilities at their Surface Warfare Engineering Facility (SWEF) with a project called the Synthetic Sea Range (SSR). The proposal primarily involves planes, boats, and radar systems (RF energy), nothing underwater. An EA and Consistency Determination are being prepared which address all operations of the facility.
I've been assisting them with documentation preparation and there is some overlap in operations with our Sea Test Range. There does not appear to be (or has the analyses indicated) significant marine mammal (or other NMFS) issues but PHD wanted to document some level of coordination with NMFS (and several other agencies including FWS and the Coastal Commission) prior to the completion of their documentation.
So, we would like to either meet with you briefly to go over the project or send you a more complete summary of the proposal for review, whichever you prefer.

V/r,
ALEX
(805) 989-0647

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL
# of pages ▸ 8
To Chuck H
From Gail P
Dept./Agency
Phone # 3105
Fax # 228-8740
Fax #
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Port Hueneme Division
Naval Surface
Warfare Center
Port Hueneme, Ca. 93043-4307

NEWS

FOR IMMEDIATE RELEASE
05-24-96-03

NAVY'S SUA PROJECT DROPPED DUE TO FUNDING SHORTFALL

The following is a Port Hueneme Division, Naval Surface Warfare Center official statement regarding the current status of the Special Use Airspace (SUA) proposal:

Over the past several years, Port Hueneme Division, Naval Surface Warfare Center (PHD NSWC) has proposed to establish a Special Use Airspace to conduct tests and evaluation in support of shipboard systems. This airspace would allow for more realistic simulations to improve operations of ship self defense combat systems, which ultimately saves the lives of Sailors.

The initiative for the Special Use Airspace (SUA) has been dropped as a result of ship self defense program reductions. PHD NSWC has evaluated test requirements and decided not to pursue the SUA project at the present time. Although operational requirements may evolve, there are no current plans to renew this project at PHD NSWC.

Because of this recent development, the Supplemental Environmental Assessment (SEA) will not be forwarded for approval or Finding of No Significant Impact. PHD NSWC will not send the SUA permit application to the Federal Aviation Administration at this time.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **INFORMATION**: Proposed New MOA

Date: April 4, 1996

From: Jack Norris, AWP-233

Reply to
Attn. of: Norris:
X7237

To: Manager, Air Traffic Branch, AWP-530
ATTN.: Scott Speer, , AWP-531.5

An operational safety review of the request by the United States Navy to establish a new MOA offshore Port Hueneme, California is enclosed. Briefly, the Navy intends to use civilian pilots to fly civil jet aircraft (Lear type) at 100 feet above the ocean surface to a point one and one half (1.5) miles offshore Port Hueneme. The operations would be conducted day and night at a speed of 350 knots. The precise flight tracks would be flown in the direction of the port and town of Port Hueneme.

Our concerns are as follows:

1. The use of civilian pilots on night operations at 100 feet above the ocean floor at speed of 350 knots.

   Our understanding is that the missions flown will be conducted by a civilian contractor. Not all contract pilots have military experience where low-level operations may be routinely flown at night.

   Unless the pilots are highly trained in complex night operations, night operations should not be conducted under the conditions proposed.

2. The proposed flight routes will occur in an area of significant pleasure boat activity. In addition, while not common, large commercial ships transit the area.

   An aircraft traveling at 350 knots and 100 feet above the surface and approaching a sailboat from the rear, could lead to a capsize or person overboard situation caused by a "startle" effect. Sail clearance could be as little as 50 feet. In addition, the flights would be conducted at an altitude that could be at or below the mast structure of a large ship. Even in VFR conditions, poor visibility's caused by marine haze and/or dawn/dusk conditions coupled with complex cockpit duties could reduce safe response time to a minimum.

To minimize possible hazards to air and sea operations, a third person acting as an observer, should be carried aboard the aircraft at all times.

3. While the impact on shore birds may not be a factor, the California brown pelican, a very large bird, traveling individually and in flocks follow schools of fish well beyond the shoreline.

While a pelican impact at the moment of pull-up may be very slight, and further, that the aircraft trajectory would carry it to a populated area is also slight, the possibility exists.

To minimize this hazard to the flight crew and the public, a third person acting as an observer, should be carried aboard the aircraft at all times.

Jack Norris

Jack Norris

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

Adopted 02/27/1996

DCA95MA007
FILE NO. 1986 12/14/94 FRESNO,CA AIRCRAFT REG. NO. N521PA TIME (LOCAL) - 11:46 PST

MAKE/MODEL - LEARJET 35A
ENGINE MAKE/MODEL - GARRETT TFE 731-2-2B
NUMBER OF ENGINES - 2

AIRCRAFT DAMAGE - Destroyed

	FATAL	SERIOUS	MINOR/NONE
CREW	2	0	0
PASS	0	0	0
OTHER	0	1	20

OPERATING CERTIFICATES - On-demand air taxi
TYPE OF FLIGHT OPERATION - Public use
REGULATION FLIGHT CONDUCTED UNDER - PUBLIC USE

LAST DEPARTURE POINT - Same as Accident
DESTINATION - Local

AIRPORT PROXIMITY - Off airport/airstrip
AIRPORT NAME - FRESNO AIR TERMINAL
RUNWAY IDENTIFICATION - 29R
RUNWAY LENGTH/WIDTH (Feet) - 9222/ 150
RUNWAY SURFACE - Asphalt
RUNWAY SURFACE CONDITION - Dry

CONDITION OF LIGHT - Daylight

WEATHER INFO SOURCE- Weather observation facility

BASIC WEATHER - Visual (VMC)
LOWEST CEILING - 10000 FT Broken
VISIBILITY - 0020.000 SM
WIND DIR/SPEED - 120 /009 KTS
TEMPERATURE (F) - 48
OBSTR TO VISION - None
PRECIPITATION - Rain showers

PILOT-IN-COMMAND AGE - 36

CERTIFICATES/RATINGS
Commercial, Airline transport, Flight instructor
Single-engine land, Multi-engine land
Helicopter
INSTRUMENT RATINGS
Airplane

FLIGHT TIME (Hours)

TOTAL ALL AIRCRAFT - 7109
LAST 90 DAYS - Unk/Nr
TOTAL MAKE/MODEL - 2747
TOTAL INSTRUMENT TIME - Unk/Nr

AT ABOUT 1146 PST, LEARJET 35A, N521PA, OPERATING AS A PUBLIC USE AIRCRAFT, CRASHED IN FRESNO, CA. OPERATING WITH CALL SIGN DART 21, THE FLIGHTCREW HAD DECLARED AN EMERGENCY INBOUND TO FRESNO AIR TERMINAL DUE TO ENGINE FIRE INDICATIONS. THEY FLEW THE AIRPLANE TOWARD A RIGHT BASE FOR THEIR REQUESTED RUNWAY, BUT THE AIRPLANE CONTINUED PAST THE AIRPORT. THE FLIGHTCREW WAS HEARD ON TOWER FREQUENCY ATTEMPTING TO DIAGNOSE THE EMERGENCY CONDITIONS AND CONTROL THE AIRPLANE UNTIL IT CRASHED, WITH LANDING GEAR DOWN, ON AN AVENUE IN FRESNO. BOTH PILOTS WERE FATALLY INJURED. TWENTY-ONE PERSONS ON THE GROUND WERE INJURED, AND 12 APARTMENT UNITS IN 2 BUILDINGS WERE DESTROYED OR SUBSTANTIALLY DAMAGED BY IMPACT OR FIRE. INVESTIGATION REVEALED THAT SPECIAL MISSION WIRING WAS NOT INSTALLED PROPERLY, LEADING TO A LACK OF OVERLOAD CURRENT PROTECTION. THE IN-FLIGHT FIRE MOST LIKELY ORIGINATED WITH A SHORT OF THE SPECIAL MISSION POWER SUPPLY WIRES IN AN AREA UNPROTECTED BY CURRENT LIMITERS. THE FIRE RESULTED IN FALSE ENGINE FIRE WARNING INDICATIONS TO THE PILOTS THAT LED THEM TO A SHUTDOWN OF THE LEFT ENGINE. AN INTENSE FIRE BURNED THROUGH THE AFT ENGINE SUPPORT BEAM, DAMAGING THE AIRPLANE STRUCTURE AND SYSTEMS IN THE AFT FUSELAGE AND MAY HAVE PRECLUDED A SUCCESSFUL EMERGENCY LANDING. (FOR FURTHER INFORMATION, SEE NTSB/AAR-95/04)

The Beacon Foundation
Box 352
3844 Channel Islands Blvd
Oxnard, CA 93035
A Nonprofit Public Benefit Corporation

Mr. Mark Delaplaine
Federal Consistency Supervisor
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

August 19, 1999

SWEF "Virtual Test Capability"

Dear Mr. Delaplaine:

The Consistency Determination submission by the U.S. Navy dated July 14, 1999 states (page 5): "The purpose of establishing the Virtual Test Capability (VTC) is to enhance and expand SWEF [Surface Warfare Engineering Facility] capabilities...."

The proposed action purports to be in accord with the Federal Coastal Zone Management Act (CZMA) Section 307 requirement that the proposed action be "...consistent to the maximum extent practicable" with the California Coastal Act.

Pursuant to CZMA regulations (15 CFR 930.34) Federal agencies are required to provide the State with a consistency determination for proposed activities affecting the coastal zone "... at the earliest practicable time in the planning or reassessment of the activity..." and "... before the Federal agency reaches a significant point of decision making in its review process."

This proposal comes to the Coastal Commission after the proposed action has been internally approved and funded, desired implementation is imminent, and a public relations campaign has been launched. The professed urgency occasioned by the Navy delay in submission must not be allowed to short cut full Coastal Commission review in compliance with its obligations under the Coastal Zone Management Act.

The submission fails the CZMA regulation requirement (15 CFR 930.39) that:

> "The consistency determination shall ... include a detailed description of the activity, its associated facilities, and their coastal zone effects, and comprehensive data and information to support the Federal agency's consistency statement."

This consistency determination fails to provide the reader with even the most basic information necessary to understand the nature and scope of the proposed action.

Withholding of the Environmental Assessment for the Proposed Action.

The paucity of information in the consistency determination is glaring in view of the Navy announcement that contemporaneously with the consistency determination it is also completing an Environmental Assessment (EA) for the proposed action. The Navy has announced that both the consistency determination and the EA will be completed this summer. Under these circumstances it violates informed decision making to ask the CCC to approve a consistency determination without providing the Environmental Assessment for Coastal Commission review.

Leap Froging the Lacking Baseline.

A decision maker cannot rationally act on the consistency determination or the Environmental Assessment without an underlying baseline environmental review of existing operations of the Surface Warfare Engineering Facility. The decision maker is being asked to evaluate a proposal to "enhance and expand" SWEF operations when there has never been an environmental review of the SWEF operations to which the proposed action is additive.

The Coastal Commission has been seeking an after- the-fact consistency determination on SWEF operations since September of 1995. In August 1995 The Beacon Foundation provided the Commission with a copy of a Navy preconstruction report detailing "unavoidable" radio frequency and other coastal zone impacts of SWEF operations. These impacts were described in the Navy pre-construction document as violations of Coastal Act policy. Despite actual knowledge of potential impacts and despite an obligation under the Coastal Zone Management Act to submit a consistency determination, the Navy proceeded to build and operate the facility without ever completing or filing an environmental review with the Coastal Commission or any other agency.

After first claiming that a consistency determination had been filed, the Navy finally admitted in 1998 that it can find no such environmental documents regarding the SWEF. Despite this admission, the Navy refuses to submit an after-the-fact consistency determination. This impass caused the CCC Executive Director to initiate an informal mediation of this "serious disagreement" in August of 1998. The Navy consented to participate and a year has been spent establishing ground rules and selecting a panel of experts to advise the Coastal Commission. The Office of

Coastal Resource Management of the U.S. Department of Commerce is facilitating the mediation and it describes the process as follows:

"The purpose of the informal negotiations is to assist the Commission in determining, relying on input from an independent and objective technical panel, whether radar emissions from the SWEF will adversely affect the public's use of coastal resources and the resources themselves."[1]

The Navy has had since 1985, when it commenced construction of the SWEF, to submit a consistency determination on SWEF operations. It has chosen not to.

The consistency determination for the proposed additions to SWEF operations follows bizzare logic. By this filing, the Navy acknowledges that the new actions require a consistency determination while continuing to deny that a consistency determination is required for the underlying SWEF operations to which the proposed action is added.

The consistency determination filing is an attempt to leap frog over the informal mediation. At a minimum, consideration of additive proposed actions needs to await completion of the informal mediation process. If, in the end, the Coastal Commission affirms its prior staff determination that SWEF operations may impact the coastal zone, environmental documentation will be required on the whole operation and not just on its expansion and enhancement.

Analytical Elements Missing.

The consistency determination withholds the specific functional parameters of the proposed action. Aircraft, ship, radar and laser operations are all elements. However, no comprehensive data is provided on characteristics of the chosen equipment or on the manner in which it will be operated. Under these circumstances, it is impossible to evaluate the conclusions of no impact on human and biological resources.

To illustrate the consequences of withholding comprehensive data, we comment below on the consistency determination treatment of impacts of aircraft on avian species. This exhibits the lack of facts necessary to evaluate the conclusions stated and also illustrates erroneous understandings of science and avian behavior.

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1. David Kaiser "Memorandum for: John D'Andrea, Ed Mantiply, and Robert Beason" July 19,1999.

Aircraft and Avian Impacts

A key element of the proposal involves use of aircraft. The Consistency Determination (page 2) indicates the SWEF was sited to "... afford clear paths for the installed radar systems to the open ocean and allow line-of-sight flight paths to the building." The proposed action would (page 2) "... test equipment and warfare scenarios using a mix of real, prototype, and simulated equipment." Only a fragmentary description is provided of aircraft operations:

(1) The Number of Aircraft is Unlimited. The "Proposed Action" section of the consistency determination (page 4) states "10 additional aircraft operations" will be required annually. "Aircraft operations" are not further defined in the text and Table 1 (page 4) offers only the additional information that they will be "2-4 hours per event." No limitation is stated on use of multiple aircraft during an event or on repeated passes during an event.

(2) The Type of Aircraft is not Defined. The "Proposed Action" section (page 4) contains no information whatsoever on the type of aircraft to be utilized. Elsewhere, in comments on noise (page 14), an anecdotal comment appears that jet aircraft used would be "primarily Lear jets."

(3) Flight Profiles are Neither Defined nor Limited. The "Proposed Action" section (page 4) states flight operations would be "conducted primarily on the Point Mugu Sea Range (Sea Range), which ends 3.5 nautical miles from shore." This would allow up to half of the operations to be somewhere outside the range including closer to the shoreline or to the Channel Islands National Park. Precisely limited flight corridors need to be defined if adjacent restricted habitat airspace is to be avoided. Instead, only the uninformative comment is offered that "Flight profiles, trajectories and flight attitudes would continue to comply wth local regulatory restrictions." Although not disclosed in the "Proposed Action" section of the consistency determination, it is elsewhere noted (page 15) that "... flight altitudes of 100 feet to 6,000 feet above the ocean surface for Lear jets, reduce the potential for bird strikes ...." This comment suggests some test flights will be as low as 100 feet from the surface of the ocean but provides no actual flight profiles and geometries.

(4) No Restrictions are Imposed on Times of Operation. There is no limitation provided on either time of day or season of the year of flight operations.

Absent the four above categories of information regarding aircraft usage, the Coastal Commission lacks the "detailed description of the activity" and the "comprehensive data" the proponent is required to provide. Based on what is provided, no evaluation by the Coastal Commission is possible that will support the Navy conclusion that the proposed action has no impact on coastal zone resources protected by policies of the Coastal Act. The filing is not only deficient for it failure to include an adequate description of the proposed action. It is also deficient for its often erroneous and unsupported scientific conclusions regarding the types of impacts that could result from actions of the type proposed. This is illustrated below in a review of the consistency determination conclusions regarding birds.

Impacts on Avian Species

The Consistency Determination lists avian species in the general vicinity of the SWEF. It fails to acknowledge the significance of the location of this facility in the midst of an ecologic area of great significance and the role of the facility itself as a habitat. Within five miles to the south of the SWEF facility are the Mugu Lagoon and Ormond Beach. Mugu Lagoon is designated by the National Audubon Society and the American Bird Conservency as a "globally" significant habitat. To the southwest some 12 nautical miles is Anacapa Island, a northern Channel Islands that is also recognized as a globally significant habitat. To the Northwest some 6.5 miles [2] is McGrath State Beach, a nesting area for the endangered snowy plover. In the immediate foreground of the SWEF is the entrance to the Port of Hueneme and the upwelling of the Hueneme marine trench -- a natural attraction for feeding birds and marine mammals.

Unlike the July 14, 1999 consistency determination, a 1994 Navy Environmental Assessment prepared by the same command (for a now abandoned proposal for special use airspace at the SWEF) did correctly recognized the habitat significance of the SWEF site as follows:

> "The SWEF and surrounding area provide an actual or potential habitat or migration area for endangered species. Those endangered species actually sighted in the area include the northern elephant seal, the California brown pelican, and the California least tern."[3]

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2. The consistency determination (page 14) erroneously states a distance of "about 12 miles north."

3. March 1994, Page 34.

The July 14, 1999 consistency determination mentions the presense throughout the year of the California brown pelican but fails to consider the extraordinary numbers found in the immediate area of the SWEF. The consistency determination erroneously states that the peregrine falcon "has not been observed in the Port Hueneme area".

At the March 10, 1998 CCC study session regarding SWEF operations (in which the Navy participated) the Commission received testmony of two eminent avian experts -- Brian Walton, Coordinator of the Predatory Bird Research Group at the University of California at Santa Cruz and Dr. Franklin Gress, Research Specialist with the California Institute of Environmental Studies. In respective letters on file with the Commission, Dr. Gress reported "the number of pelicans roosting on mainland sites in the potentially impacted area [of the SWEF] on any given day during the breeding season varies widely, but could be as many as 3,000." and Mr. Walton reported "I have seen peregrines on the SWEF building ...." [4]

Noise.

The consistency determination (page 15) asserts: "There is no evidence that the noise levels or the presence of aircraft would significantly affect the flight behaviour of birds." However, contrary to this assertion, a critically important impact of the proposed action on the California brown pelican, an endangered species, is disclosed in the Consistency Determination and then dismissed as follows (page 14-15):

> "Flights of Lear jets and helicopters on the Sea Range could disturb brown pelicans while nesting (March-July) at the west end of Anacapa Island or foraging over the ocean in the flight path. The low number of flights, however, is unlikely to cause disturbances that would adversely affect reproductive success. Infrequent disturbance of foraging brown pelicans would affect few individuals and would have no adverse effect on their survival."

The preparer knows that sound levels on West Anacapa Island and on flight paths over water may be at a decibel levels sufficient to cause scatter and flee harrassment of brown pelicans. However, these noise calculations are not disclosed nor is any factual basis provided for the Navy conclusion that only a "few individuals" would be affected and that it would have "no adverse effect on their survival" or reproductive success.

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4. Letter of Franklin Gress to Mark Delaplaine, March 6, 1998 and Letter of Brian Walton to Mark Delaplaine, March 18, 1998.

The number and density of brown pelicans on Anacapa Island is extraordinary particularly during the breeding season which in most years is February-September[5] not March-July as stated in the Consistency Determination. The land area of all parts of Anacapa Island taken together is just 1.1 square miles. During the breeding season "... as many as 6,000 pairs of brown pelicans may be nesting on Anacapa Island; in addition, an estimated 2,000-3,000 non breeders may also be present." [6]

It is well known in the scientific literature that noise, including aircraft noise, can have a significant impact on nesting birds and in some species these consequences may include flushing from nests and resultant damage or abandonment of nesting sites, eggs or newborns. Regarding pelicans:

> "Both Amercan white pelicans and brown pelicans appear to be particularly susceptible to disturbance. Pelican biologists have discovered that low-flying aircraft can contribute to dramatic reductions in survivorship of young and in overall productivity of a nesting colony."[7]

Anacapa Island is part of the Channel Islands National Park and is within the Channel Islands National Marine Sanctuary. West Anacapa Island has been given additional protection by the State of California as one of 19 ecological reserves established by the State in marine and esturarine environments.

The State of California established the Anacapa Island Ecological Reserve to protect the brown pelican fledging area on West Anacapa Island by, among other things, restricting all public entry into the area during the period January 1 to October 31. Other California restrictions expressly limit noise.

Air Pollution

The consistency determination concludes (page 15) that "Air emissions from the proposed action would not be expected to significantly impact birds" Detailed

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5. Letter of Franklin Gress to Carl Thelander, March 26, 1996.

6. Ibid.

7. U.S. Department of the Interior, Report on Effects of Aircraft Overflights on the National Park System, July, 1995, page 115.

calculations of carbon monoxide and other emissions are reported. In order to make these calculations the preparer had to utilize specific and undisclosed information regarding the number and type of aircraft, flight paths, and geometries. This information is required to evaluate the conclusion that a lack of significant impact is "expected."

RF Exposure

A single scientific work dated 1967 -- more than thirty years ago -- is cited to support the Consistency Determination statement that: "There is little scientific evidence to indicate that RF exposure has adverse impacts to birds." Fundamental changes have occured in emitters and in knowledge of the effects of their microwave emissions:

> "Technological advances have increased the output power of microwave emitters several-fold during the past 30 years, enhancing concerns over inadvertent human exposure."[8]

and:

> "Research has shown that exposure to microwave radiation can cause behaviorial changes in man and laboratory animals that range from perception of warmth and sound to high body temperatures that can result in grand mal seizures and eventual death. In laboratory animals, trained behavior can be either perturbed or stopped outright."[9]

and further:

> "Performance of cognitively mediated tasks may be disrupted at levels of exposure lower than that required to elicit behaviorial thermoregulation. Unlike disruption of performance of a simple task, a disruption of cognitive function could lead to profound errors in judgment due to alterations of perception, disruption of memory processes, attention, and/or learning ability, resulting in modified but not totally disrupted behavior." [10]

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8. John D'Andrea, Naval Health Research Center Detachment, Brooks Air Force Base, Texas, "Behavior Evaluation of Microwave Irradiation", Bioelectromagnetics 20:64-74 (1999) page 64.

9. Ibid.

10 Ibid, page 69.

In dismissing effect of RF on avian species, the Consistency Determination states that all RFR effects on birds are temporary; that "A flying bird would be too far away and illuminated for too short a time to be affected by any radar beam;"[11] that birds roosting on radar antennas are sensitive to heat and will "simply fly off when it began to get too hot"; that RF effects are not additive; and that once a radar begins to move "any bird perched there fly away."[12] None of these conclusions are supported and each requires actual environmental review by the preparer in light of current scientific knowledge. Such a review must include full disclosure of the proposed action. This is not provided in the document now before the California Coastal Commission.

Bird Strikes.

The Consistency Determination comment on bird strikes is based on the premise (page 15) that "The proposed increase of 10 flights per year would have a negligible impact associated with bird strikes." The proposed action is not "10 flights" but rather 10 flight "periods" that will utilize undisclosed numbers, types, speeds, passes and manuvers of aircraft. Impacts of the actual proposed action are not considered in the Bird Strike discussion.

Furthermore, the bird strike "negligible impact" conclusion depends on the fanciful belief (page 15) that "The brown pelican is a low-altitude forager, usually at heights below 60 feet." The authority for this belief is "PHDNSWC 1995, " a document not further described and not listed in the Reference section of the Consistency Determination.

The assertion that pelicans are low-altitude foragers is intended to obviate concern that proposed action flights as low as 100 feet would encounter these birds. In its previous consideration of the SWEF Special Use Airspace proposal, the Commission received expert testimony debunking the very same Navy assertions regarding pelicans.

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11. The preparer assumes birds fly across and not toward radar emitters such as those on a stationary structure like the SWEF.

12. The consistency determination notes (page 2) that among radars at the SWEF are those with "phased array capability" defined as "a type of radar antenna that moves electronically .... [and] does not physically move...." It is also the case some SWEF radars are encased in radomes and, as to these, even if their antenna move this movement is invisible.

Carl Thelander, Director of the Western Foundation of Vertebrate Zoology stated in a comment on file with the Commission dated March 27, 1996:

> "It is my opinion, contrary to the [SWEF Special Use Airspace] EA/SEA, there is a very high probability of mid-air collisions occuring between test aircraft and Brown Pelicans .... I believe further analysis will reveal that Brown Pelicans regularly fly at or above 100 feet, especially when travelling between Anacapa Island and the mainland, and when moving between foraging locations. Such information could be easily determined through a modest study of daily activity patterns using telemetry in conjunction with field observers."[13]

Dr. Franklin Gress of the California Institute of Environmental Studies noted in a comment on file with the Commission dated March 26, 1996:

> "Brown pelican flight elevations vary according to their activities. They can soar, circling about searching for food at heights of well over 1,000 or more feet; they can plunge-dive for food from over 100 feet or less; they can come into mainland or island roost sites from varying heights from circling in from over 100 feet to just circling the water surface. In other words, flying pelicans can be at any altitude within this range; there is no 'typical' elevation for flight."[14]

Impacts on avian species are apparent from the above analysis. All impacts are denied in the consistency determination without a factual basis or analysis. The proposed action does not comply, among others, with Section 30230 of the Coastal Act providing:

> "Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance...."

It is incompatible also with the policy of Section 30240 that:

> "(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas."

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13. Letter to John Buse.

14 Letter to Carl Thelander.

"(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas."

General Conclusion

The proposed action is not a free standing activity. The lack of a baseline for existing SWEF operations is the subject of an informal mediation on going at this time between the Coastal Commission and the Navy. That process needs to reach a conclusion before consideration can logically be given to expanded functional operations and additions of radar and other equipment.

In addition to the lack of a baseline, the present filing is deficient in its description of the proposed action making it impossible to evaluate impacts.

It should be unacceptable that this submission is made to the Coastal Commission without providing the contemporaneously prepared Environmental Assessment for the proposed action. Environmental review should not be a game of hide and seek.

In addition to the failure to factually describe the proposed action , the submission is deeply flawed (as illustrated above in the treatment of impacts on avian species) by its use of erroneous and out of date scientific assumptions.

The Navy delayed its filing until the eve of desired implementation. This is contrary to Coastal Zone Management Act requirements. Self created time pressure should not short cut the required Coastal Commission review.

The California Coastal Commission should decline concurrence in this consistency determination for a proposed action to "enhance and expand SWEF capabilities."

For The Beacon Foundation,

Vickie Finan | Gordon Birr | Lee Quaintance

Jean Rountree | Ellen Spiegel | Don Dodd

DEPARTMENT OF THE NAVY
PORT HUENEME DIVISION
NAVAL SURFACE WARFARE CENTER
PORT HUENEME, CALIFORNIA 93043-5007

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Mr. Mark Delaphaine
Federal Consistency Supervisor
Califonria Coastal Commission
49 Fremont Street, Suite 2000
San Francisco, CA 94105-5200

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Dear Mr. Delphaine,

Thank you for forwarding the BEACON Foundation's questions. We hope the information provided below will be helpful to you in responding to their concerns.

General.

The Virtual Test Capability (VTC) is the official name of the Navy's proposed action and accurately reflects what the action involves. For clarification purposes, the VTC proposal is not a request for a Special Use Airspace as was proposed in 1994 and withdrawn in 1996. The proposed VTC does not seek a special provision from the Federal Aviation Administration (FAA) for exemptions to current FAA rules and regulations, as was the case with the Special Use Airspace project. The Navy intends to continue to conduct all SWEF/VTC operations involving the use of aircraft on the Point Mugu Sea Range (Sea Range), which ends 3.5 nautical miles from shore. In the unlikely event that flight operations are not conducted on the Sea Range, they would continue to be conducted in Federal Aviation Administration (FAA) controlled airspace and all flight profiles, trajectories, and altitudes would continue to comply with FAA and local regulatory restrictions. Historically, off-range flight operations have occurred only once in the last 10 years. (Page 4 of the CD last paragraph and appendix C table C-1 of the EA)

(1) Aircraft Operations.

(a) Definition of Event. An event normally involves one or two aircraft and lasts two-four hours. The flight profiles may or may not involve "passes" at the facility; the number of specific profiles that aircraft would make would vary, depending on type of aircraft used and duration of the event. (page 2-10 of EA)

As we stated in our August 17, 1999 letter, all aspects of flight operations such as flight patterns, altitudes, profiles, speeds, and distance from shore will be restricted to and in conformance with Sea Range, FAA and any other applicable regulations. The flight operations associated with the proposed action will comply with existing standards and protocol and will not require any special or unique permission or waivers. (Paragraph 3.1.2 of EA)

Under existing FAA and local regulations, flights could fly over the Channel Islands National Park or Channel Islands Marine Sanctuary at a minimum elevation of 2000 feet and in the Santa

and in the Santa Barbara Channel 500 feet above and 1000 feet from all objects including boats. (Page 2-3 of EA)

Every effort will be made to continue to conduct flight operations on the Sea Range. In the unlikely event that the Sea Range is not available and operational necessity precludes the event from being rescheduled, the flight operations would take place in FAA controlled airspace and would be conducted in compliance with all FAA and local regulatory restrictions. Additionally, as with all commercial air traffic off-range flight plans are submitted to FAA and are available to the public. (page 3.1.2 of EA)

(b) Types of Aircraft to be utilized. The same types of aircraft that are currently used will continue to be used, namely military jets, Lear Jets and helicopters (page 2-10 EA).

(c) Human and Wildlife Safety. The Navy is subject to and abides by all established standard safety practices, developed by the FAA and other regulatory agencies. These practices were developed and put in place to ensure both public and environmental (including wildlife) safety. (Section 3.1.2 of EA)

By letter dated March 1, 2000, the California Coastal Commission (Mark Delaplaine) contacted o the FAA requesting their input on the VTC. By letter dated March 9, 2000, the FAA indicated that they had no comment on the VTC because the Navy is complying with FAA and local regulations. (See letter from FAA.)

The flight operations associated with the proposed action will comply with existing standards and protocols and will not require any special or unique permission or waivers. (Paragraph 3.1.2 of EA)

Events are not restricted to daytime or VFR conditions.

The pilots of the aircraft will be either military or commercial. (Section 3.1.2 of EA)

Aircraft modifications, if any, will comply with FAA regulations. (Section 4.1.1 of EA, page 4-4.)

FAA does not require that a third person act as a safety visual observer. As previously noted all off-range flight operations will be conducted in compliance with FAA and local regulatory restriction.

In regard to noise, the aircraft will be operated in compliance with all applicable local regulations. (Section 4.4 of EA). The local and federal standards, as referenced in section 3.4 of the EA, do not use the term single event. Instead the local regulations use a variable standard that allows different levels above ambient levels for different periods of time (tables 3.4-1 and 3.4-2 of the EA).

The Navy intends to continue to conduct all SWEF/VTC operations involving the use of aircraft on the Point Mugu Sea Range (Sea Range), which ends 3.5 nautical miles from shore. In the unlikely event that flight operations are not conducted on the Sea Range, they would continue to be conducted in Federal Aviation Administration (FAA) controlled airspace and all flight profiles and trajectories and flight altitudes would continue to comply with FAA and local regulatory restrictions. Historically, off-range flight operations have occurred only once in the last 10 years. (Page 4 of the CD last paragraph and appendix C table C-1 of the EA)

(2) "Consistency Determination for 'Current Operations'".

SWEF's current operations are the baseline from which the Navy will evaluate the impacts of future proposed actions under environmental planning statutes. The Navy has described SWEF's current operations, including aircraft operations, in both our draft EA and the consistency determination for the proposed VTC. The Navy would be glad to answer any additional questions that the Commission may have with regards to current operations in the context of reviewing the Navy's consistency determination for the proposed action.

Aspects of current and proposed events such as types and numbers of aircraft used, length of time, flight patterns and profiles would not change. The change associated with the proposed VTC is the installation and operation of new equipment that would electronically connect Navy facility assets with Navy fleet assets and the number of operations supported by aircraft and boats would increase. (page 2-10 EA)

(3) "Capabilities of Radar Emitters."

(a) The two new radar systems which are surface/ air search radars will comply with existing and planned safety requirements and operations restrictions agreed to during the informal mediation between the Navy and CCC. (i.e. no radiation below zero degrees, implementation of radiation sectors if the radiation hazard zone extends beyond the internal Navy fence, etc.) Furthermore, the Navy will provide to CCC staff, prior to system installation, the preliminary RF assessment (the design document) that contains the planned radiate power levels, system gain, antenna height, and non-radiate sectors. Upon completation of the installation, a copy of the RF hazard survey report will be provided to CCC staff. (page 2-9 of the EA)

(b) The Aegis Spy 1-A will not have all of the equipment necessary to operate in an active or passive mode; therefore it is not capable of transmitting. The system will not produce any RF emissions. The antenna is a large structure mounted to the face of the SWEF and was included in the VTC documentation to expedite the CCC's review of all currently planned modifications to SWEF. Page 2-8 EA).

(c) The proposed action will not change the operational restrictions on any radar. All agreed to operational restrictions will apply to all new systems (i.e. the radiation zones or min. radiation elevation restrictions will not change.) (page 2-9 of the EA)

If you have any questions or need further clarification please contact Mr. Chuck Hogle at (805) 228-8225.

Sincerely,

K. M. CAREY
Commander, U. S. Navy
Acting