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DRR

TITLE: AREA IV CHARACTERIZATION, AND MONITORING/SURVEILLANCE PROGRAM, HEALTH & SAFETY PLAN

APPROVALS

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REV. LTR.	REVISION	APPROVAL/DATE
A	Eliminated Chemical Characterization from scope <i>DRR 25209 DS</i>	<i>Sam Reeder 5-20-94</i> <i>K. Shane 4/25/94</i> <i>R.D. Meyer 5-18-94</i> <i>Phil Rutherford 4/22/94</i> <i>Phil Rutherford 5/20/94</i>
B	Deleted requirement for Hazardous Waste Worker Training and need for hard hats. <i>DRR 25218</i>	<i>Allen 7/19/94</i> <i>K. Shane 7/22/94</i> <i>S. Reeder 8/2/94</i> <i>R.D. Meyer 8/13/94</i>

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HEALTH AND SAFETY PLAN AREA IV CHARACTERIZATION

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INTRODUCTION

The Area IV region of Rocketdyne's Santa Susana Field Laboratory will be systematically examined for the presence of radiological contamination. The examination will include both field surveying with qualitative & quantitative instruments, and samples will be sent to laboratories for quantitative analysis. The resultant findings will be presented in a report characterizing the site with respect to the nature and extent of contamination.

The activities to be performed under this plan are described in two documents:

- (1) *Area IV Radiological Characterization Plan*, A4CM-AN-0003; and
- (2) *Area IV Monitoring and Surveillance Plan*, ER-AN-0006.

The hazards associated with implementation of these plans are common and have been consolidated into this single Health and Safety Plan.

The initial activity is to implement item (1). Item (2), the *Area IV Monitoring and Surveillance Plan* is not yet funded.

This plan establishes requirements and provides guidelines for worker safety during field activities at the location identified below as Area IV. Field activities will include:

- (1) Site coordinate grid surveying;
- (2) Site ambient radiation surveying;
- (3) Environmental media sampling:
 - (a) Collection of soil samples from varying depth using a power auger and transferring the samples to sampling jars;
 - (b) Collection of limited surface water samples;
 - (c) Collection of vegetation samples.

- (4) Emission/effluent sampling - This activity will be conducted as part of Rocketdyne's on-going activities to satisfy environmental monitoring requirements.

The purpose of this plan is to assign responsibilities, establish personal protection standards, outline mandatory safety practices and provide for contingencies that may arise.

SITE DESCRIPTION & HISTORICAL BACKGROUND

Area IV is one of four geographical divisions of the Santa Susana Field Laboratory (SSFL). SSFL is divided based on ownership and operations conducted therein. Area IV encompasses 290 acres of the northwest section of SSFL normally referred to as Burro Flats.

The SSFL is located in eastern Ventura County, California near the Ventura County-Los Angeles County border. It is located in mountainous terrain at approximately 1,700 to 2,200 ft above mean standard sea level. The total area of the SSFL is approximately 2,688 acres. The facility is bordered to the north by Simi Valley, to the east by the community of San Fernando Valley, and to the southwest by the Thousand Oaks area. Each community has a population that exceeds 100,000 persons.

Shortly after the passage of the Atomic Energy Act in 1946, North American Aviation, Inc. (NAA) began to investigate business opportunities relative to peaceful uses of atomic energy. About the same time, NAA purchased a large tract in the Simi Hills, primarily for the purpose of testing rocket engines. This tract became known as the Santa Susana Field Laboratory (SSFL). When the Atomic International Division (AI) of NAA was formed in 1955, a remote site was needed for nuclear reactor development and testing. AI took over the portion of SSFL that is now designated as Area IV. AI's NAA sister division, Rocketdyne, occupied Areas I, II, and III for rocket engine testing. In 1966, NAA merged with Rockwell-Standard to form North American Rockwell. The name of the corporation was later changed to the present name, Rockwell International.

AI activities at Area IV in the late 1950's and 1960's were directed primarily to development of advanced nuclear energy power plants and associated research & development. Several facilities were constructed

and operated to support these activities. (please refer to *Area IV Radiological Characterization Plan A4CM-AN-0003*)

In 1978, with the decline of nuclear power and associated R&D efforts, AI expanded its activities to cover general energy related technology. About the same time, AI was reorganized and absorbed into the Energy Systems Group (ESG). In 1984, ESG (including ETEC) was merged into the Rocketdyne Division of Rockwell International. Since then, Rocketdyne has operated all parts of SSFL.

By the mid-1970's, operations had ended at all nuclear reactors and most other nuclear facilities. Non-nuclear work then dominated Area IV. Decontamination and decommissioning (D&D) work for Area IV began as early as 1975 and continues. Over 90% of the facilities have been cleaned, with over 99% of the radioactivity removed. The last nuclear fuel materials were shipped from the site in May 1989. Activities at the site is currently limited to decommissioning operations only.

The use of chemical compounds of many types was associated with the research and development activities. Materials of construction, solvents, working fluids, heat transport media, etc. have all been employed during the site occupation. Treatment and disposal of nonradioactive (eg.chemical) contaminants were added to the remediation plan. While examining the site for the presence of radionuclides, the potential exists that chemical substances may be found, exposing survey personnel to chemical hazards.

SAFETY AUTHORIZATION KEY PERSONNEL & ORGANIZATION

The provisions of the Health and Safety Plan are mandatory for all Rocketdyne employees working on-site. Also applicable are the requirements of the Rocketdyne Health and Safety Procedures Manual. Work by contractors will be governed by Health and Safety Plans prepared by them and approved by Rocketdyne.

The Associate Program Manager (APM) and the Health and Safety Officer (HSO) are responsible for implementation of this plan.

The APM has overall responsibility for initiating and directing a reasonable and effective program of personal protection and accident prevention. The APM will supervise the allocation of resources and staffing to implement specific aspects of this plan. The APM may delegate authority to expedite any application of the program.

The APM shall direct all on-site field activities. The APM has the following primary responsibilities:

- * Assure that personnel are aware of the provisions of this plan;
- * Assure that appropriate personal protective equipment (PPE) is available;
- * Monitor the safety performance of all personnel to ensure that the required work practices are employed;
- * Correct any work practices or conditions that may result in injury or exposure to hazardous substances; and
- * Prepare any accident/incident reports.

The HSO will serve as safety advisor for the duration of the project, provide guidance on data interpretation and advise on appropriate levels of worker protection. The HSO or his designee has the following primary responsibilities:

- * Implement and/or modify this Health and Safety Plan as appropriate for site conditions;
- * Assure that personnel are aware of the potential hazards associated with site operations;
- * Conduct instructions in the work practices necessary to ensure safety and familiarity with planned procedures for dealing with emergencies;
- * Determine the appropriate personal protective equipment that should be worn;
- * Bring to the attention of APM, any work practices or conditions that are hazardous;
- * When necessary,
 - (1) Conduct air monitoring for hazardous materials,
 - (2) Conduct heat stress monitoring, and
 - (3) Conduct monitoring of combustible gases & their explosive levels during field activities.
- * Conduct periodic audits and inspections of field work-sites to document adherence to prescribed safe work practices.

HAZARD ANALYSIS

Chemical Hazards:

It is anticipated that only low airborne concentrations of chemical constituents may be encountered during field activities.

Periodic air monitoring will be conducted by the HSO or his designee during media sampling operations. This is to obtain representative data to verify adequacy of prescribed levels of personal protection. The HNU-model 101 photoionization detector (PID) will be used by the HSO to periodically monitor air quality. The PID is capable of detecting organic vapors with ionization potentials greater than 10.2 eV in a non-specific basis. The monitoring equipment procedures are described below.

Inspect & calibrate the HNU monitor to manufacturer's instructions prior to work start-up of each sampling day. Re-calibrate after cleaning the lamp or when background levels drift. This instrument is sensitive to humidity and may require periodic lamp cleaning if it is humid. Record calibration in the log book. Monitor and record readings from each new sample site in the log book. If readings are above background, stop work and upgrade PPE. Failure of the HNU monitor to work or calibrate properly must be reported to the Associate Program Manager immediately.

The HSO may decide that in addition to the monitoring conducted using the HNU monitor, personal monitoring of breathing zone exposures may be conducted using an organic vapor monitor badge (3M OVM badge). The badges will be sent to a AIHA certified laboratory for analysis. This enables calculation of personnel exposure levels over a 8-hour time weighted average. The laboratory analysis results will be entered in the log book.

Radioactivity Hazards:

Radioactivity above natural background levels is not expected. Radioactivity detection instruments, employed by competent personnel, will be used to characterize the radiation environment. In the event elevated levels of radioactivity are detected, Rocketdyne Health Physicists will be notified to provide the proper course of action.

Environmental Stress & Hazards:

Other hazards which may be encountered at the site are poison oak, rattlesnakes and heat. The poison oak is located in the vegetated areas and may be present around areas where field activities takes place. It is identified by glossy (shiny) leaves. Rattlesnakes are also likely to be present. Area IV is also characterized by hilly and rocky terrain which may pose potential tripping and falling hazards. Certain field activities may require personnel to work from unstable or wet surfaces. Workers should use caution and carefully assess the work area upon approach. Always request additional assistance to assure safe performance of work tasks.

Adverse conditions, especially heat, are likely to be encountered. Personal protective equipment adds to the possibility of heat-related stress. One or more of the following will help reduce heat stress:

- * Provide non-diuretic (non-caffeinated) liquid to replace body fluids lost due to sweating. Personnel should be encouraged to drink generous amounts of water, even if not thirsty. Commercial mixes containing salts (eg. Gatorade) should also be consumed to prevent dehydration.

- * In extremely hot weather, conduct non-emergency response operations in the early morning or evening.
- * Ensure that adequate shelter is available to protect personnel against adverse weather which can decrease physical efficiency and increase the probability of accidents.
- * In hot weather, rotate shifts of workers wearing impervious clothing or provide for frequent breaks.

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur, ranging from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity or movement) to death. The crew leader shall monitor workers for heat stress.

Some heat-related problems include the following:

- * **Heat Stress:** caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Symptoms include a decreased ability to tolerate heat.
- * **Heat Cramps:** caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs include muscle spasms and pain in the extremities and abdomen.
- * **Heat Exhaustion:** caused by increased stress on various organs to meet increased demands to cool the body. Signs include shallow breathing, pale, cool moist skin, profuse sweating, dizziness and lassitude.

- * **Heat Stroke:** The most severe form of heat stress. The body must be cooled immediately to prevent severe injury and/or death. Signs and symptoms are red, hot dry skin; no perspiration; nausea; dizziness and confusion; strong rapid pulse and, possibly, coma.

Personnel who exhibit any symptoms of heat stress will be removed from the sampling site and allowed to rest in a shaded area. Standard First Aid reference books should be consulted for specific treatment. Upon appropriate appraisal of the situation, the HSO may require personnel to be transported to the First Aid Station (Bldg. #207) located in Area II of SSFL. Heat stroke is a life-threatening condition. Transportation to the First Aid Station is required immediately.

Other Physical Agents:

Other physical hazards that may exist include noise during field operations. Excessive noise can reduce a worker's ability to communicate, and physical damage to ears and temporary or permanent hearing loss can occur due to excessive noise. Damage to ears and temporary or permanent hearing loss can be prevented by wearing ear plugs. Noise monitoring may be conducted during the initiation of this project's field activities to determine if there is a need to implement a hearing conservation program. Hearing protection will be worn when noise levels exceeds 85 dBa. Ear protection must also be worn while in designated hearing protection required areas.

Potential for electrical injury to workers is possible at field work-sites. Caution should be exercised in using small portable electrical equipment and field monitoring equipment. To help minimize this hazard, only low voltage DC equipment, or low voltage AC equipment with ground-fault interrupters and water-tight corrosion resistant connecting cables

should be used on site. Also be alert to buried electric lines when conducting soil sampling. Refer to "A4CM-CA-0001 *Site Map*" for underground utilities. Workers should also be alert to locations of overhead utility lines. Care should be exercised at all times not to disturb or come in contact with overhead utility lines.

Explosion or fire may occur where numerous chemicals are present to include certain chemical reactions, ignition of explosive or flammable chemicals, and the ignition of materials due to oxygen enrichment. Also, smoking by workers presents a potential for causing explosion or fire; therefore, no smoking is permitted at field work-sites. The HSO may require that combustible gases be monitored by the Crew Leader during field work. If the concentration exceeds 10% of the lower explosive levels (LEL), work will be stopped and the area evacuated until vapor concentrations are reduced.

Summary:

The potential impacts of the identified hazardous constituents and general risk of the work to be performed on-site by workers, and impact to the environment and the public are anticipated to be minimal. Good safety practices and procedures will be expected to minimize and mitigate any abnormalities that may arise.

TRAINING REQUIREMENTS

Per the US Department of Energy requirements (DOE 5480.11, *Radiation Protection for Occupational Workers*, December 1988), all field personnel will receive a 3 hour training course on radiation hazards. This is course # 4013 "*Radiation Safety*".

Due to the remote locations of the work-sites, all work shall be performed in teams of at least 2 workers. All workers assigned to the team must be trained and possess current certification in CPR and First Aid. This is course # 4044 "*Cardio Pulmonary Resuscitation*".

All field personnel shall be familiarized with the contents and requirements as defined in this HASP.

Records of training shall be maintained by the ETEC Training Coordinator.

PERSONAL PROTECTIVE EQUIPMENT

Personnel must wear protective equipment when work activities involve known or suspected atmospheric contamination, when dangerous vapors, gases, or particulates may be generated, or when direct contact with dermally active substances may occur. Respirators can protect lungs, the gastrointestinal tract, and eyes against air toxicants. Chemical-resistant clothing can protect the skin from contact with skin-destructive and skin-absorbable chemicals. Good personal hygiene limits or prevents ingestion of materials.

Protection levels designed to protect the body against contact with known or anticipated chemical hazards are divided into four categories according to the degree of protection afforded:

Level A: Should be selected when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection.

Level C: Should be selected when types of airborne substances are known, the concentrations are measured, and the criteria for using air-purifying respirators are met.

Level D: Should be worn on sites with no respiratory or skin hazards. This is primarily a work uniform providing minimal protection.

The level of protection selected is based on: (1) Determination of hazards by HSO by air monitoring data. (2) Types and measured concentrations of the chemical substances in the ambient atmosphere and their associated toxicity. (3) Potential exposure to substances in

air, splashes of liquids, or other indirect contact with material due to the task being performed.

**** FOR THE PURPOSE OF THIS PROJECT, LEVEL D IS ANTICIPATED BASED UPON THE CONCENTRATIONS OF HAZARDOUS CONSTITUENTS AND RADIOACTIVITY ANTICIPATED. THE HSO WILL MAKE FINAL DETERMINATION OF PPE REQUIREMENTS UPON PROJECT INITIATION. SAID DETERMINATION WILL BE LOGGED IN THE FIELD ACTIVITY LOGS.**

The following components of clothing and equipment assembled together are detailed for Level C and Level D protection.:

Level D Protection:

1. Personal Protective Ensemble:

Required:

- Safety boots/shoes
- Coveralls (cloth or coated TYVEK)
- Gloves
- Safety glasses or chemical splash goggles

Optional:

- Hearing protection, if necessary
- Escape mask, if necessary
- Face shield
- Hardhat

2. Criteria for Level D selection:

The use of Level D protection is permissible only where no hazardous air pollutants have been measured in the breathing zone, and where work functions preclude splashes, immersion, or potential for unexpected inhalation of any hazardous chemicals (ie, no inhalable toxic substances).

Level C Protection:

1. Personal Protective Equipment:

Required:

- Full-face or half-mask, air purifying respirators (NIOSH approved)
- Chemical resistant clothing (TYVEK)
- Chemical resistant gloves (outer & inner)
- Chemical resistant safety boots
- Hardhat

2. Criteria for level C selection:

The use of Level C protection is permissible only where (1) oxygen concentrations are greater than or equal to 19.5% by volume. (2) Measured air concentrations of identified substances will be reduced by the respirator below the substance's threshold limit value (TLV) and the concentration is within the service limit of the canister.

MEDICAL SURVEILLANCE

Workers will have to be found medically fit to participate in field activities. All personnel assigned to field work will participate in the company's Medical Surveillance program and receive annual physical examinations. The examination will include a medical and occupational history review, physical exam (sight, hearing, and pulmonary), blood and urine laboratory tests, and a physician's evaluation.

Medical records will be confidential in accordance with CCR Title 8. Records will be maintained for thirty years, in accordance with OSHA's rule on Access to Employee Exposure and Medical Records.

EMERGENCY RESPONSE PLAN

Emergency services, including a fire department and EMT staff, are available at the SSFL facility. The Control Center in Area II is the headquarters for emergency services. For all emergencies, call extension 5333 (818/586-5333) directly from any on-site telephone. On-site security will contact outside emergency services as necessary.

Due to the nature of the field activities which may be conducted at remote locations without ready accessibility to telephones, it is imperative that field work be conducted in teams of at least 2 workers.

Should outside services be required, the nearest hospitals are:

- (1) West Valley Hospital
22141 Roscoe Blvd.
Canoga Park, CA
(818) 340-0580

- (2) Humana Hospital
7300 Medical Center Drive
Canoga Park, CA
(818) 712-4100

A map to the hospitals is shown in Attachment-01.

In the event of adverse weather conditions, the HSO or APM may suspend field work to protect the safety and health of field personnel. Issues to be considered in determining whether work should be suspended are the potential for heat stress, inclement weather, lightning strikes, and limited visibility.

The emergency contact personnel include the following:

Associate Program Manager:

Alex Klein
(818) 586-5920 (SSFL)

Health & Safety Officer:

Kathy Shane
(818) 586-4800 (Canoga) Beeper #: 1036

Alternate:

Josh Erman
(818) 586-6067 (SSFL) Beeper # 1866

Site Manager:

Rodney Meyer
(818) 586-5400 (SSFL)

First Aid Station: (818) 586-5622 (SSFL)

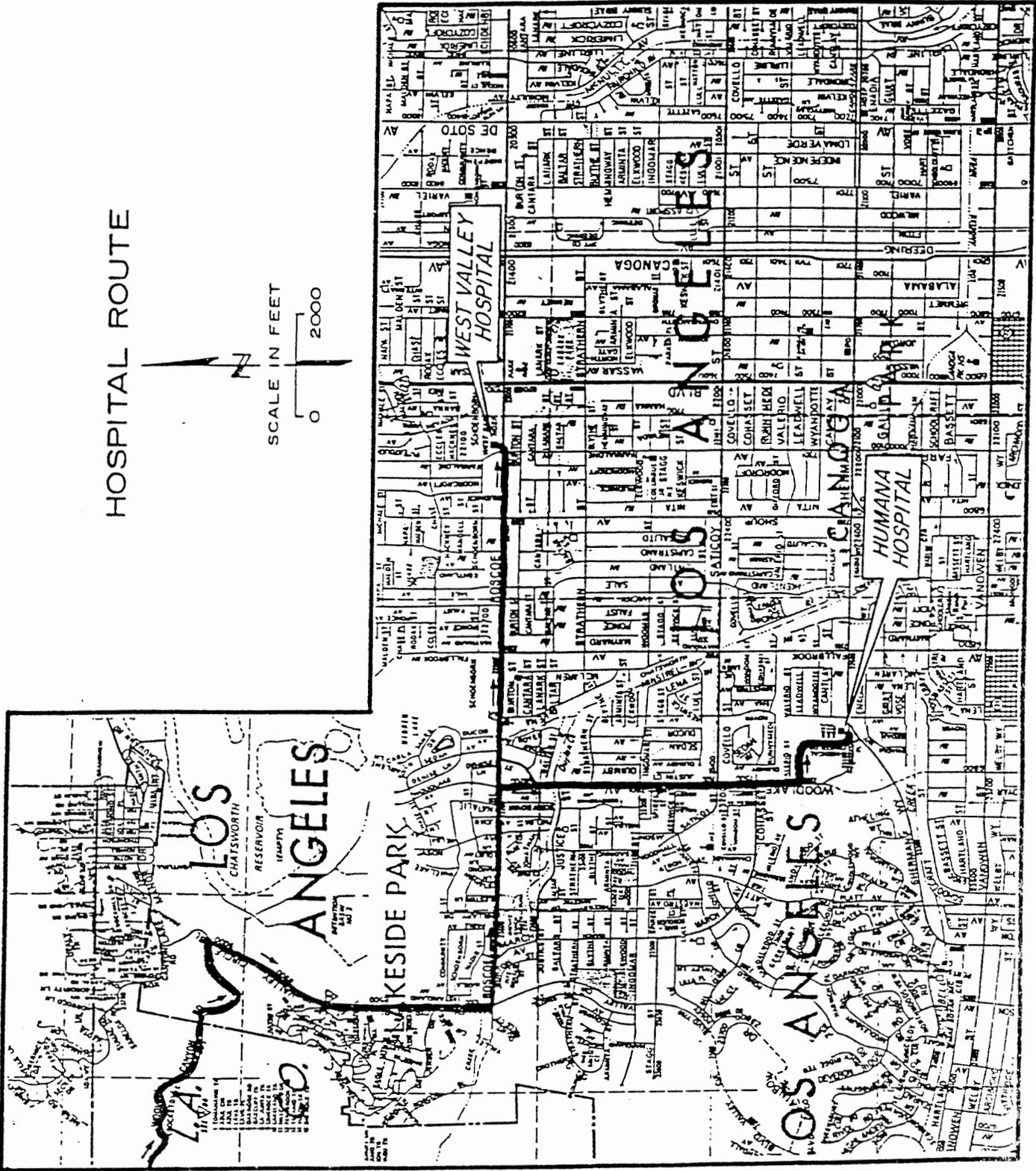
Security Control Center: (818) 586-5333 (SSFL)

DOCUMENTATION REQUIREMENTS

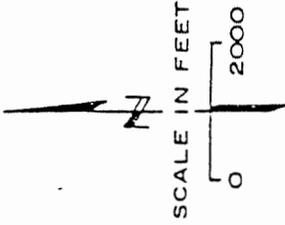
It is the responsibility of (1) the HSO to establish, and (2) the APM to assure, proper and adequate domentation and records for the following:

- * Occupational injuries and illness;
- * Accidents/incidents;
- * Health & Safety monitoring logs;
- * Inspections & citations, and corrective actions;
- * Safety training.

Field activity logs shall be prepared and maintained by the crew leader, containing data which supports and is useable for the above proposes.



HOSPITAL ROUTE



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