WALK-THROUGH SURVEY REPORT

Contract #210-77-006

Todd Pacific Shipyards Corporation
Los Angeles Division
P.O. Box 2321, 701 Front Street
San Pedro, California 90733

DATE OF SURVEY

January 31, 1979

DATE OF REPORT

August 30, 1979

The Johns Hopkins University
Baltimore, Maryland

and

The National Institute for Occupational Safety and Health
Cincinnati, Ohio

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PURPOSE

To develop preliminary information concerning the suitability of this plant for inclusion in the investigation of health hazards in the painting trades. This investigation is being carried out by The Johns Hopkins University School of Hygiene and Public Health and The Institute of Applied Technology under contract with The National Institute for Occupational Safety and Health (NIOSH).

PERSONS CONDUCTING SURVEY

Genevieve M. Matanoski, M.D., Dr.P.H., Principal Investigator, The Johns Hopkins University
Newton E. Whitman, M.S., Industrial HYgienist, The Johns Hopkins University
Shiro Tanaka, M.D., Physician, The National Institute for Occupational Safety and Health

PERSONS PREPARING REPORT

Dr. Genevieve M. Matanoski, The Johns Hopkins University
Mr. Newton E. Whitman, The John Hopkins University

CORPORATION AND PLANT CONTACTS

Mr. John B. O'Hara, Director Industrial Relations
Ms. Julie Bega, Administrative Assistant to Mr. O'Hara
Mr. Raymond H. Courtois, Safety Engineer
Mr. Donald Miller, Paint Foreman
Mr. Oren E. Funkhouser, General Foreman Paint/Labor
Mr. William Barbeau, Plant Engineer
Dr. Robert J. Frie, Plant Physician
Mr. William Cook, Plant Protection Supervisor

UNION CONTACTS

Mr. M. B. Burns, Safety Chairman Local 9, Industrial Union of Marine and Shipbuilding Workers of America

DESCRIPTION OF PLANT

This yard is known as the Los Angeles Division of the Todd Pacific Coast Shipyards Corporation. Todd Pacific Coast Shipyards is in turn a subsidary of Todd Shipyards Corporation, 1 State Street Plaza, New York, New York 10004. Todd acquired this yard from the Los Angeles Shipbuilding and Drydock Company in 1944. According to Mr. O'Hara, Director of Industrial Relations, it is very doubtful if there are any employee records or employees remaining from World War II days. He explained that turnover has always been high in the shipyard. In 1978, it was between 35-50% and for 1979, so far it has been about 25%.

The general layout of the yard is shown in Appendix 1. It occupies approximately 90 acres in the San Pedro harbour area which is heavily industrialized and has a number of other shipyards and various manufacturing plants. Most of the ship construction and repairing is done in the open. There are three building ways with corresponding platen areas for new ship construction on the east side of the yard. Along the water's edge to the north are four wharves A, B, C and D. There is a drydock along side of Wharf D. There have not been any abrupt drastic changes in the yard since it was taken over by Todd; however, there have been a series of gradual changes which have improved the functioning of the yard greatly. Among the recent alterations was the installation of a panel line which facilitates the movement of large steel pieces by means of 175 ton cranes to the platen areas.

The three principal activities of the yard are ship repair, ship conversion and new ship construction. Currently it is estimated that new construction requires about 75% of the yard's total effort with the remaining 25% being devoted to repair work. This situation is largely due to the yard having recently obtained a substantial contract with the Federal Government for new guided missilefrigates. This contract will occupy most of their time and effort for a number of years.

There are about 2,700 production workers and 300 office workers employed at the present time. Most employees work on the day shift with only about 350 on the second shift and 50 on the night shift. Most painting, sandblasting and maintenance work is done on the second and third shifts.

DESCRIPTION OF PROCESS

Steel for the fabrication or repair of vessels comes into the southeast part of the yard by railroad. There it is cleaned by abrasive blasting and coated with a zinc silicate corrosion resistant coating and stored

until needed. As required, the steel plates are brought to the planer nearby where the plates are cut to size with gas-air torches. These operations are highly mechanized and carried out in open structures with good natural ventilation. Hence there is very little exposure to fumes, dusts or gases.

The plates after cutting are then transported by the panel line mentioned previously to the platen areas where they are incorporated into various sections of the vessels. These sections are commonly constructed upside down. Most of the construction is by welding, generally of the inert gas shielded arc type. Prior to the welding the zinc coating is removed along the lines of the weld by grinding. Much of the welding is done in the open; however, when done in a confined space, fresh air is supplied. Some of the welding is automatic rather than manual.

There is a limited amount of painting done during this stage of construction. Usually a primer such as Expoxy Primer No. 150 is applied by spraying. After the sections of the vessel are completed they are moved into place on one of the building ways by means of the two large 175 ton cranes. These sections are then welded together to form the hull of the vessel. After this, the fabrication of the superstructure is begun. On these Navy vessels all structures above the main deck are made of an aluminum alloy. Fabrication with this alloy requires the use of a newly developed water-shielded plasma cutting torch. The use of the water shield greatly reduces the exposure to strong ultraviolet radiation and the resulting high ozone levels commonly found in past uses of the plasma torch. After this phase of the work is completed the vessel is launched and moved to a wharf for outfitting.

Repair of ordinary ships is usually carried out at the wharves of the drydock and involves the use of much the same techniques as in new ship construction. However, it differs in that in repair work there is tremendous pressure to complete the work in a minimum amount of time and hence there is a temptation to ignore or slight necessary safety and health precautions.

PAINTING OPERATIONS

There are 72 painters employed at this yard at the present time. The painters add thinner to the paint to adjust the viscosity shortly before using. They also do some of the abrasive blasting although major blasting assignments are done by outside contractors. The synthetic abrasive used is a typical copper slag type which is generally very low in free silica and lead. Most of the paint is applied with airless spray guns, the balance being applied with compressed air guns. When working outside, painters are required to wear regular paint spray respirators such as the Willson 1200 (See Appendix 2). When working in a confined space an airline respirator is required.

Material Safety Data Sheets have been supplied by the yard for most of the paints in use. Appendix 3 summarizes these materials in terms of the type of coating: epoxy, conventional, zinc, anti-fouling and thinners.

It is noteworthy that many of these materials are epoxy coatings containing substantial amounts of epichlorohydrin and polyamide catalysts. In addition some red lead and zinc chromate primer are used but apparently in small quantities. The Annual Emission Inventory Report (Appendix 4) gives some idea of the amounts of various types of coatings used by the Los Angeles Yard in 1977.

Not much painting was in progress during the survey. Apparently this was due largely to the fact that most painting on new ships is done after launching. The first guided misslefrigate is to be launched in September, 1979.

DESCRIPTION OF WORKFORCE AND PERSONNEL RECORDS SYSTEM

The current workforce includes 2,700 production workers and 300 in administration. The industry, however, has had marked fluctuations and 50% of the current employees may have been hired in the last year or so. During World War II this plant had up to 20,000 employees but it dropped to as low as 200 to 300 employees during subsequent years. The plant works on three shifts at the present time with 2,300 employees on days, about 350 on a swing shift, and about 50 at night. Sand blasting and painting are frequently done on the swing and night shifts. Some prime coating is put on the steel before it is cut to parts and again some primer is applied before the tanks are placed into the ship. After the tanks are in the ship, touch-up blasting and subsequent painting must be done. At the present time there are about 40 active painters and 32 have been currently temporarily laid off. Painting is an intermittent activity in relation to shipbuilding and therefore, the number of painters changes according to the load at the time. Painters are not transferred from the painting department into another department when the work is slack. It is expected that by about September there will be more painters added on. The percent women employees are about 2%. Minority group percentages were not determined.

The personnel record on each individual includes name, date of birth, address, social security number, and a clock number. There is in addition an employment record which includes all the occupations which the man held while in the plant. For retirees this record is kept within the personnel folder; for other individuals this record is kept separately for at least five years in the yard and longer in storage facilities. The oldest painter has probably been in the plant for about 18 years. The average age in the plant now is probably about 35 years, although it was quite a bit higher in previous periods. The plant has an extremely high turnover rate of perhaps 5,000 people a year being hired on and leaving at some

time according to plant estimates. This represents, however, about a 35-40% turnover in the last several years as there has been a build-up of the population during that time.

The retirement plan has been in effect since 1960 and employees are eligible for retirement after 55 and are vested after 10 years. At present there are about 330 retirees. Aetna carries their workmen's claims. They also have a routine medical insurance which can be covered by either Blue Cross of California or Kaiser Permanente. This company has no life insurance policy; however, retirees can claim a death benefit for beneficiaries. For this group death certificates are obtained and are available within the man's retirement chart. No other death certificates are available on site.

DESCRIPTION OF THE MEDICAL PROGRAM

The medical facility at Todd Shipyards is staffed by two nurses on the day shift and one nurse on the swing shift. All employees get a pre-employment physical which is conducted by a doctor from an outside clinic. The doctor is available every morning on a regular basis. In addition, the plant does audiometric screening on many individuals, visual screening, respiratory function but no blood tests or routine urinalysis. Medical records are retained about 20 years, x-rays are kept for about five years. A separate log of information pertaining to occupationally related injuries is also kept in the medical department.

SAFETY AND INDUSTRIAL HYGIENE

Safety and industrial hygiene are under supervision of Raymone H. Courtois, Safety Engineer. There is no industrial hygienist at the Los Angeles Yard; however, there is an industrial hygienist at the Todd Seattle Shipyard who is available on request. Also the insurance carrier, Aetna, can supply an industrial hygienist. The safety program is quite comprehensive. It includes an extensive respirator program (see Appendix 2). All respirators are cleaned and repaired by the Central Tool Room. Supervisors and other employees are trained in the proper use of respirators, and refresher training is given at intervals. Safety glasses and hard hats are mandatory for anyone in the production facilities. Safety shoes are not mandatory but workers are encouraged to wear them. Showers are provided and painters are given additional time off at lunch time and at the end of the shift for cleaning up. Respirators are turned in to the tool room at the end of the shift.

Aside from the painting, hot work (that is, cutting and welding) appears to be of greatest concern from the industrial hygiene standpoint. Because of the extensive application of aluminum in the guided misslefrigate, the plasma cutting torch is used frequently. Fortunately a new plasma cutting torch is on hand which employs a water shield. This shield greatly reduces the release of very intense ultraviolet radiation which was formerly a frequent cause of flash burn and skin burns as well as high ozone levels in the

in the breathing zone. Welding is generally of the inert gas shielded arc type using argon. This type of welding is also a source of strong ultraviolet radiation and ozone if not carefully controlled.

A rather unusual feature in the safety and health program of this yard is due to the presence of Mr. M. B. Burns, Union Safety Representative. Mr. Burns is very interested in safety and health matters and also has a great influence with the production employees. As a result, compliance with the rules concerning the wearing of respirators, hard hats and other personal protective devices is unusually good.

As in any shipyard, there are in this yard many potential health and safety hazards. In general, these hazards seem well controlled. This is indicated by the report concerning the very low incidence of compensible reportable injuries in the paint departments of the Todd Corporation in general and only one in the Los Angeles Division (See Appendix 5).

REPRESENTATIVE COATING COMPONENTS

The components shown were selected from Material Safety Data Sheets judged to be representative. The lists include the coating description, quantity of use, number of painters estimated to be directly exposed plus nearby halo or peripheral groups who might be presumed to be exposed at some level, method of application (conventional compressed air, high pressure airless, hand held, electrostatic, machine applied or hand held), and ingredients listed as hazardous.

PRE-PRIME: Approximately 12,000 gal/yr; 2-3 painters (or clean up and fill) exposed; Automatic

Zinc Dust
Ethanol
Isopropanol
Ethylene Glucol Monoethyl Ether
Xylol

RED LEAD PRIMER: Small amount per yr. 30 painters exposed; powder made into past and pumped with gun into hubs of wheels on ships Note: Rare use but required by Navy in small quantities for specific areas of ships.

Naphtha
Methanol
Hi-Solv. Hydrocarbon
Lead (Metal Equiv)
Cobalt (Metal Equiv)

ANTI-FOULING PAINTS: 5,000 gal/yr; 75 painters; 0 others exposed; ?Spray gun

Mineral Spirits
Xylene
Cuprous Oxide
Vinyl Chloride
MIBK

TOP-COATINGS: 5,000 gal/yr; 75 painters exposed;
Spray

Cellosolve
nButyl Alcohol
Mineral Spirits
Polymide
Epichloro Hi Drin
Butanol
Naphtha

THINNERS & SOLVENTS: 5,000 gal/yr; 75 painters exposed;
Use in paints, wash, cleaning, thinning etc.

HI Flash Nafts
Butnal
MIBK
Toluene
Cellosolve
Xylene

EPOXY PRIMERS: 25,000 gal/yr; 75 painters exposed;
Spray-open air and closed spaces

Polyamide
Epiculoro III Drin
Butanol
Naptha

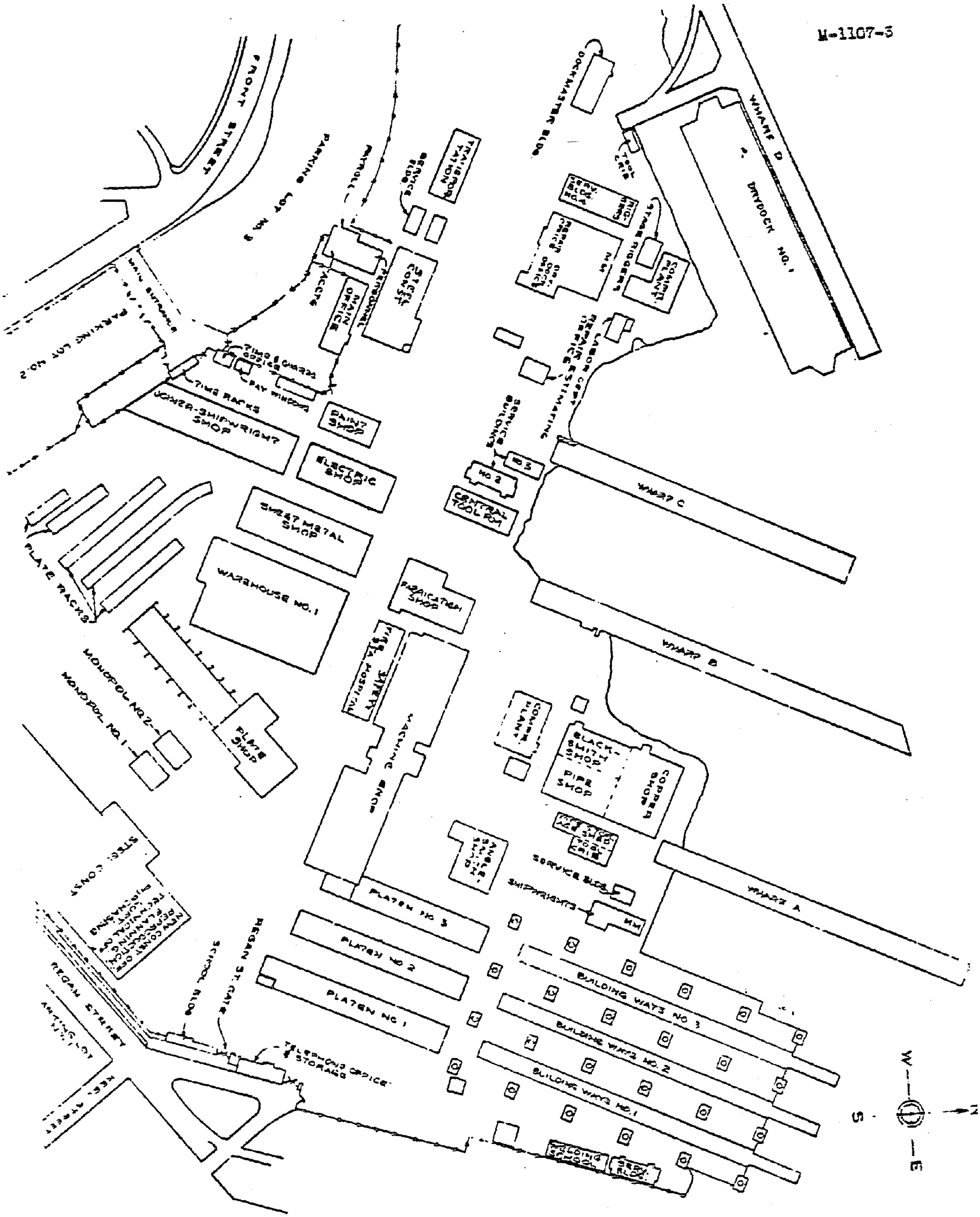
RECOMMENDATIONS

Industrial Hygiene: This shipyard should be regarded as a possible candidate for an industrial hygiene study in view of the fact that the possession of the contract for guided missilefrigates gives assurance that there will be a steady fairly high level of painting in progress for a number of years.

Epidemiology: Although the records in the plant could perhaps be constructed to include the total population base for many years it is apparent that a high proportion of those records would include employees who had been exposed to the types of paints which were in common use in the 40's and 50's rather than paints which are more likely to have been used recently. It is, of course, recognized that this group of individuals would also provide the greatest information about mortality since their current age distribution would be old. The high turnover rate in this plant would mean that we might be following a large number of indivduals who had very minimal exposure to any of the potential harzards. Therefore, this is probably not an ideal site to study epidemiologically.

Appendix 1

M-1107-3


FRONT STREET
PARKING LOT NO. 3
PARKING LOT NO. 2
MAIN ENTRANCE
PATROL
SERVICE BLDG
TRANSPORTATION
DOCKMASTER BLDG
WHARF D
DRYDOCK NO. 1
TOOL CRIB
SERV. BLDG. NO. 4
STAGE RIGGERS
COMPR PLANT
REPAIR ESTIMATING
LABOR DEPT
STEEL CONST.
PERSONNEL
ACCTG
MAIN OFFICE
TIME & CHECKS OFFICES
PAY WINDOWS
TIME RACKS
JOINER-SHIPWRIGHT SHOP
PAINT SHOP
ELECTRIC SHOP
SERVICE BUILDINGS
NO. 3
NO. 2
CENTRAL TOOL RM
WHARF C
SHEET METAL SHOP
PLATE RACKS
WAREHOUSE NO. 1
FABRICATION SHOP
WHARF B
FIRST AID HOSPITAL
SAFETY
MACHINE SHOP
COMPR PLANT
BLACKSMITH SHOP
PIPE SHOP
COPPER SHOP
MONOPOL NO. 2
MONOPOL NO. 1
PLATE SHOP
STEEL CONST.
NEW CONST. OFF. TECHNICAL DEPT PLANNING & PURCHASING
SERVICE BLDG.
SHIPWRIGHTS
WHARF A
PLATEN NO 3
PLATEN NO 2
PLATEN NO 1
BUILDING WAYS NO. 3
BUILDING WAYS NO. 2
BUILDING WAYS NO. 1
REGAN ST. GATE
SCHOOL BLDG
REGAN STREET
TELEPHONE OFFICE & STORAGE
KEEL STREET
WELDING SCHOOL
SERV. BLDG.
W
N
S
E

Appendix 2

TODD PACIFIC SHIPYARDS CORPORATION
LOS ANGELES DIVISION

STANDARD PROCEDURE

SUBJECT: RESPIRATORY PROTECTION PROCEDURE	PROCEDURE NO. 67.05.06 Rev. B
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APPROVED: H. K. Schaefer PREPARED BY: Ray Courtois	DATE December 29, 1978

1.0 GENERAL

This procedure was developed for the use of operating personnel concerned with the wearing, cleaning, issuing and storing of respiratory protection devices, as required by Federal and State law. OSHACT 1910.134 and Cal-OSHA Title 8, Section 5144 apply.

2.0 PURPOSE

In practice, this procedure is to be followed for all operations involving respiratory protection. Bearing in mind that shipyards are normally exposed to a wide range of hazards, from simple nuisance dust to oxygen deprived or toxic atmospheres, it is vital that respiratory protection devices selected are appropriate for the hazard.

Because some of the Federal and State laws covering respiratory protection are technical in nature, and may be outside supervisory training or experience, this procedure has been deliberately simplified. The following basic regulation shall be the prime directive, and Department Heads shall advise their Supervisors accordingly:

> "It shall be the direct responsibility of the Line Supervisor to determine the hazard, equip his men with appropriate protection, monitor its use and provide training and instruction."

This is necessary due to the multiplicity of operations and their constantly changing character. If there is any doubt as to the atmosphere in any compartment, call the Fire Department before permitting an employee to enter.

3.0 RESPONSIBILITY

3.1 Line Supervisor

3.1.1 As previously stated in the prime directive, the Line Supervisor shall be responsible for the protection of his crew. Under no circumstances shall a Supervisor permit any man into an area where the atmosphere is unknown. This rule is inviolate.

3.1.2 Determination of actual atmospheric hazard will be made by the Marine Chemist, and shall be posted by the yard Fire Department. It should be especially noted that what appears to be sweet pure air, may still be oxygen deprived, or may contain odorless contaminents. Since hazard identification and chemical analysis are highly technical in nature, and require complex equipment and trained personnel, it is necessary for Supervisors to assure themselves that hazards have been identified, and that each man working in the area is equipped with the correct respiratory protection as drawn from the Tool Room. See paragraph 3.3.

3.0 RESPONSIBILITY (cont'd.)

3.1.3 Line Supervisors must be alert to the fact that employees will very often take protective devices from one job to another without regard for the specific contaminant or its intensity. Very few jobs are exactly alike, and protection suitable for one, may expose employees elsewhere. Devices must be returned to the Tool Room after each job to avoid this exposure.

3.1.4 It will be the responsibility of the Supervisor to train each man in his crew in the correct usage, fitment and daily maintenance of the individual respiratory protective device. The Tool Room will provide manufacturers recommendations as required. It should be noted that beards often prevent a satisfactory seal and any employee required to wear a respiratory protection device in the performance of his duties, cannot be permitted to work if the seal is not adequate.

3.1.5 Supervisors shall conduct frequent random inspections to assure that respirators are correctly used, cleaned and maintained.

3.1.6 When self-contained breathing apparatus or hose masks with blowers are used in atmospheres dangerous to life or health, standby men must be present with suitable rescue equipment.

3.1.7 When air line respirators are used in atmospheres dangerous to life or health, men shall be equipped with safety harness and safety lines.

3.2 Department Heads and Foremen

3.2.1 It shall be the responsibility of the Foreman to provide the training and leadership necessary for the satisfactory compliance of these procedures by his Line Supervisors.

3.2.2 Frequent random spot checks shall be made to assure employee protection and supervisory performance.

3.2.3 A log shall be maintained and signed by each Line Supervisor indicating that these procedures have been read and understood, and that satisfactory training has been given. A copy shall be maintined by the Safety Office.

3.3 Tool Room Personnel

3.3.1 It shall be the responsibility of the Tool Room staff to issue the appropriate respiratory protection equipment based on hazard identification information provided by the work crew Supervisor.

3.0 RESPONSIBILITY (cont'd.)

3.3.2. The issuing personnel shall decline to provide any protective equipment if, in their opinion, hazard information is insufficient; not based on accurate survey; or based on individual employee preference, rather than that equipment necessary to provide adequate protection.

3.3.3 It shall be the responsibility of the Tool Room to provide care and maintenance of respiratory protective devices. Such care and maintenance shall include the following:

3.3.3.1 Inspection for defects including leak checks.

3.3.3.2 Cleaning and disinfecting.

3.3.3.3 Repair.

3.3.3.4 Storage.

3.3.4 Respirator inspection shall include a check of connections, face piece condition, head piece, head bands, valves, and canisters. Rubber parts shall be inspected for pliability and signs of deterioration.

3.3.5 A record shall be kept of inspection dates, condition of equipment and repairs made.

3.3.6 No respirator shall be reissued prior to inspection, cleaning and repair.

3.3.7 Only qualified personnel shall issue, clean or repair respirators.

3.3.8 Respirators shall be stored after cleaning, inspecting and repairing, to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Storage containers shall permit a normal position of parts to avoid distortion or 'reset'.

3.4 Tool Room Supervisor

3.4.1 It shall be the responsibility of the Tool Room Supervisor to provide and procure only that respiratory equipment that complies with current Federal and State law. Equipment shall be approved by N.I.O.S.H. as successors to the Bureau of Mines approval seal.

3.4.2 The Tool Room Supervisor shall train and supervise selected Tool Room personnel in those requirements outlined in paragraph 3.3 of this procedure.

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PAGE 4 OF 4	
DATE December 29, 1978	

3.0 RESPONSIBILITY (cont'd.)

3.5 Safety Engineer

3.5.1 It shall be the responsibility of the Safety Engineer to monitor all phases of this procedure. Spot checks shall be made of all provisions contained herein. Non-compliance will be reported to the proper authority.

3.5.2 The Safety Engineer shall advise the Tool Room Supervisor on the latest O.S.H.A., Cal O.S.H.A. and N.I.O.S.H. requirements and shall assist in selection and purchasing of necessary equipment so that compliance with law is met.

3.5.3 The Safety Engineer shall assist in such training as may be necessary to achieve the provisions of this procedure.

3.6 Fire Department

3.6.1 It shall be the responsibility of the Fire Department personnel to post such information as considered necessary by the Marine Chemist and to inspect each 'space' at intervals specified.

3.6.2 It shall further be the responsibility of the Fire Department to proivde such assistance as may be requested by Line Supervisors, such as identification of hazard, degree of intensity of hazard, interpretation of Marine Chemist requirements, and monitoring of operations to determine change in character of hazard. Firemen should not provide advice on specific types of respiratory protection. See Tool Room Personnel, paragraph 3.3.

4.0 ATTACHMENTS TO PROCEDURE

4.1	APPENDIX A	Manufacturer's Typical Data Sheet
4.2	APPENDIX B	Respiratory Protection Instruction Certification Card

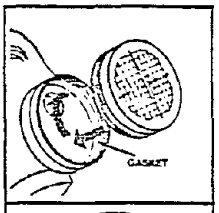
APPENDIX "A"

WILLSON® 1200 SERIES RESPIRATORS INSTRUCTION SHEET

The Willson series provides a wide range of protection against common industrial respiratory hazards. One basic facepiece assembly can be fitted with a variety of cartridges and filters combining versatile, economical respiratory protection with wearing comfort. The basic facepiece can be quickly modified for a variety of uses, by simply changing the cartridge-filter combination. Facepieces are molded of resilient rubber with soft, comfortable, rolled edges and easily adjusted elastic headbands.

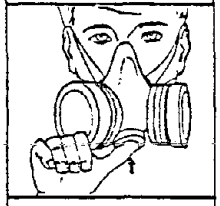
RESP. NO.	DESCRIPTION	NIOSH TC APPROVAL NO.
1210	Dust/Mist	TC-21C-140
1211	Dust/Mist/Fumes	TC-21C-141
1212	Radionuclide	TC-21C-142
1221	Organic Vapor	TC-23C-50
122110	Organic Vapor, Dust/Mist	TC-23C-51
122113	Organic Vapor, Dust/Fumes/Mist	TC-23C-52
122115	Organic Vapor, Pesticides, Paint, Lacquer, and Enamel Mists, and Dusts and Mists	TC-23C-54
1224	Ammonia/Methylamine	TC-23C-70
122410	Ammonia/Methylamine, Dust/Mist	TC-23C-71
1225	Organic Vapor/Acid Gas	TC-23C-76
122510	Organic Vapor/Acid Gas/Dust/Mist	TC-23C-77

INSTRUCTIONS FOR USE

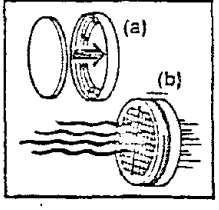


1. Remove respirator, cartridges and filters from plastic bags. Check to see that gasket is in cartridge holder before screwing in cartridges. Insert filter into retainer caps and snap onto cartridge holder or cartridges.

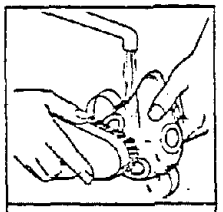
2. FIT RESPIRATOR ON FACE with narrow end over nose. Adjust headband around neck and crown of head, snug enough to insure a tight but comfortable seal.



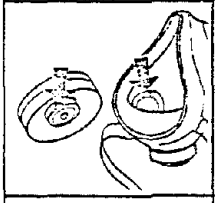
3. TEST FOR TIGHTNESS: Place the palm of the hand or thumb over the valve guard and press lightly. Exhale to cause a slight pressure inside facepiece. If no air escapes, respirator is properly fitted. If air escapes, readjust respirator and test again.



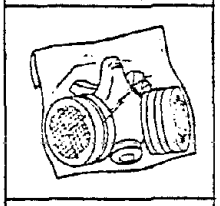
4. FILTERS (a) REPLACE when breathing becomes difficult. Generally the filter discs should be changed after eight hours of dusty exposure. (b) REPLACE CARTRIDGES when any leakage is detected by taste or smell.



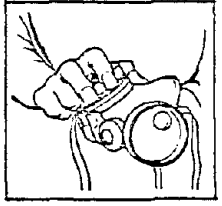
5. CLEAN AND SANITIZE YOUR RESPIRATOR after each day's use. First remove filters and cartridges, then wash other parts thoroughly with warm soapy water and/or sanitize with Willson's Germisol®.



6. The cartridge holders are keyed to assure their correct positioning and maintain the proper balance of the device. Make sure they are properly positioned and seated.



7. KEEP RESPIRATOR CLEAN when not in use. Store in container provided. Replace worn or faulty parts immediately, and order by part number.



8. FOR YOUR PROTECTION the DUST FILTERS and CHEMICAL CARTRIDGES must be assembled tightly, and changed frequently, according to exposure.

9. Many chemicals can be absorbed through the skin. Wear protective clothing when necessary.

TAKE CARE OF YOUR RESPIRATOR AND YOUR HEALTH

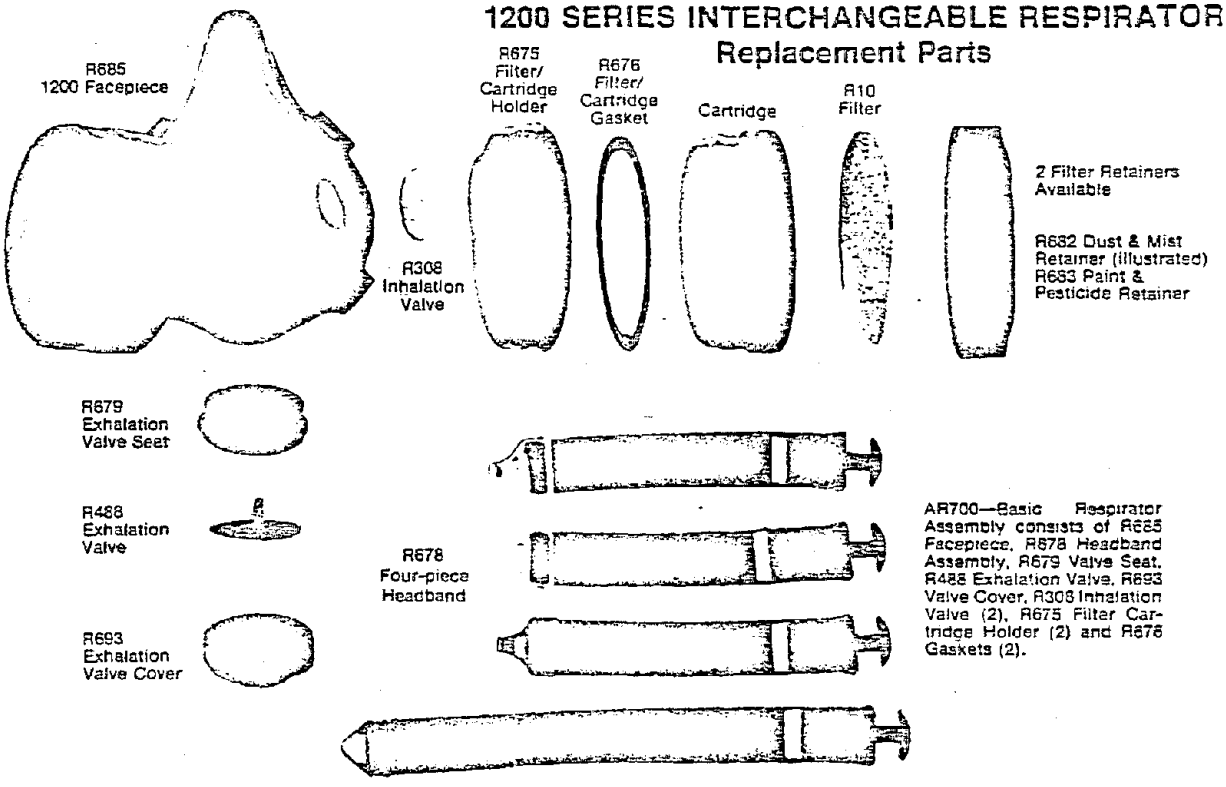
ESB WILLSON®

WILLSON PRODUCTS DIVISION
ESB Incorporated
P.O. Box 622
Reading, Pa. 19603
Phone: 215/376-6161

CAUTION

The Willson 1200 series respirators are not to be worn in atmospheres immediately dangerous to life or health or in atmospheres containing less than 19.5% oxygen.

1200 SERIES INTERCHANGEABLE RESPIRATOR
Replacement Parts



AR700—Basic Respirator Assembly consists of R685 Facepiece, R678 Headband Assembly, R679 Valve Seat, R488 Exhalation Valve, R693 Valve Cover, R308 Inhalation Valve (2), R675 Filter Cartridge Holder (2) and R676 Gaskets (2).

DUSTS AND MISTS

NIOSH/MESA Approval No. TC-21C-140

Respirator No. 1210

R10 Filters with R682 Retainers approved for respiratory protection against dusts and mists having a time weighted average not less than 0.05 milligram per cubic meter, 2 million particles per cubic foot, and asbestos containing dusts and mists. Not for use in atmospheres containing toxic gases or vapors. *Also approved in conjunction with:*

	NIOSH/MESA Approval No.
R21 Organic Vapor Cartridge	TC-23C-51
R24 Ammonia & Methylamine Cartridge	TC-23C-71
R25 Organic Vapor/Acid Gas Cartridge	TC-23C-77

DUSTS, FUMES AND MISTS

NIOSH/MESA Approval No. TC-21C-141

Respirator No. 1211

R11 Filter Cartridge approved for respiratory protection against dusts, fumes and mists having a time weighted average not less than 0.05 milligram per cubic meter, dusts and mists having a time weighted average not less than 2 million particles per cubic foot. Not for use in atmospheres containing toxic gases or vapors.

R13 Filter approved for respiratory protection against dusts, fumes and mists in conjunction with R21 Organic Vapor Cartridge. NIOSH/MESA Approval No. TC-23C-52

RADIONUCLIDES

NIOSH/MESA Approval No. TC-21C-142

Respirator No. 1212

R12 Filter approved for respiratory protection against dusts, fumes and mists having a time-weighted average less than 0.05 milligram per cubic meter and radionuclides. Not for use in atmospheres containing toxic gases and vapors.

ORGANIC VAPORS

NIOSH/MESA Approval No. TC-23C-50

Respirator No. 1221

R21 Cartridge approved for respiratory protection against not more then one-tenth (0.1) percent organic vapors by volume. Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with sorbent material in the cartridge. Maximum use concentrations will be lower than 0.1 percent where that concentration produces atmospheres immediately dangerous to life or health.

ORGANIC VAPORS, PESTICIDES, PAINTS, LACQUERS, & ENAMEL MISTS, AND DUSTS & MISTS

NIOSH/MESA Approval No. TC-23C-54

Respirator No. 122115

R15 Filters with R683 Retainers when used in conjunction with R21 organic vapor cartridges are approved for respiratory protection against: (1) not more than 1,000 part per million organic vapors by volume; (2) pesticides; (3) mists of paints, lacquers and enamels; (4) dusts and mists having a time weighted average not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot; (5) any combination thereof. Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with sorbent material in the cartridge. Maximum use concentration will be lower than 1,000 parts per million where that concentration of organic vapors produces atmospheres immediately dangerous to life or health. Not approved for fumigants.

AMMONIA & METHYLAMINE

NIOSH/MESA Approval No. TC-23C-70

Respirator No. 1224

R24 Cartridge approved for respiratory protection against not more than 300 parts per million ammonia or 100 parts per million methylamine.

ORGANIC VAPOR/ACID GAS

NIOSH/MESA Approval No. TC-23C-76

Respirator No. 1225

R25 Cartridge approved for respiratory protection against not more than 1000 parts per million organic vapors, 10 parts per million chlorine, 50 parts per million hydrogen chloride, or 50 parts per million sulfur dioxide. Not to be used against organic vapors with poor warning properties or those which generate high heats of reaction with sorbent material in the cartridge.

APPENDIX B

Badge No._____

RESPIRATORY PROTECTION

I, _____, have been instructed and trained in the need, use, care and limitations of respiratory equipment provided by Todd Shipyards Corporation. I have been instructed in how to properly fit and test respiratory equipment by _____. I will inspect
(Ldmn., Qutrmn, Foreman)
my respirator before each use. I will not wear it if a good gas-tight face seal cannot be made and will report such condition to my Supervisor.

_____ _____

Date Signed Signed By

THE ABOVE CARD TO FILLED OUT AND RETAINED BY THE DEPARTMENT

Appendix 3

Pacific

TODD SHIPYARDS CORPORATION

INTEROFFICE CORRESPONDENCE

FROM: C.L.FUNKHOUSER PLANT: L.A.

TO: F.B.McELHILL PLANT: L.A.

RE: South Coast Air Quality Management District Annual Emission Inventory Report DATE: 3-20-78

Following is total usage of Marine Coating Materials for Calendar Year 1977:

ITEMS: 1. 25,149 Gals. of Primer
5,075 Gals. anti-fouling

2. 4,740 gals. Top Coatings (Exterior and Interior)

3. 4,757 gals. of Thinners and reducers.

O. L. Funkhouser

O.L. Funkhouser

EPOXY

4424/4423	----------	MIL-P-23236
244 H.S	----------	MIL-P-23236
207		
150 Green	----------	MIL-P-24441
151 Gray	----------	MIL-P-24441
156 Red	----------	MIL-P-24441

CONVENTIONAL

Formula	124/58	Alkyd White
"	116	Red Lead
"	84	Zinc Chromate
"	TT-E-490	Semi-gloss

ZINC

Carbo Weld 11
Catha Coat 305

ANTI - FOULING

121/63 Vinyl anti-fouling Red
129 " " " Black
SuperTropical N.B. Anti-fouling
OFFSHORE Anti-fouling

THINNER

#18 Epoxy Reducer
5 Union Thinner
#4415 Solvent
4 Vinyl Thinner
#11 Solvent
ISOPROPYL ALCOHOL

Appendix 4

bcc: H. K. Schaefer
W. Barbeau
~~O.~~ Funkhouser
D. Miller
D. Wilson
C. E. Jones, NYO
File

1977

March 20, 1978

South Coast
Air Quality Management District
9420 Telstar Avenue
El Monte, California 91731

Attention: Ayjay Wilson
Air Programs Division

Subject: Annual Emission Inventory Report

Reference: Your letter of February 28, 1978
addressed to Users of Marine Coatings

Gentlemen:

The following is the total usage of marine coating materials for the calendar year 1977 for this facility. The items are numbered to correspond with the items in your letter.

Item 1 - 25,149 gals. of primer
5,075 gals. anti-fouling

Item 2 - 4,740 gals. top coatings
(exterior and interior)

Item 3 - 4,757 gals. of thinners and reducers.

Very truly yours,

F. B. McElhill
Director of Administration

39,721 Gal Total/All Types

FBM:vb

Appendix 5

1. The Todd Corporation has experienced the following production manhours:

Policy year	1977	10,357,990
Policy year	1978	12,089,600
Policy year	1979 (to date)	7,480,129
	TOTAL	29,927,719

Of the above manhours, the Los Angeles Division has experienced 10,229,782 manhours.

2. In this two-and-a-half year time frame, the Todd Corporation has experienced three -- repeat three -- compensible, reportable injuries in their paint departments throughout the Corporation.

One case was here in the Los Angeles Division on a minor matter involving inhalation of fumes. This was our case #148 in 1977.

No cases were reported throughout the Corporation for policy year 1978.

Two cases have been reported at Todd Seattle in the current policy year; one case is a valid claim, the other of questionable nature and is still under investigation.

3. Todd employs approximately 370 painters throughout the Corporation, 72 of which are recorded on the Los Angeles Division payroll at this time.

4. Our Corporate and Divisional requirements for personal protection, including dissemination of required preventive injury methods and analyses of material hazard data sheets, are the principal factors underlying our excellent OD experience with paint products.

5. Our painter manhours equal .03 of our total manhours.

6. All paint products used are furnished by prominent marine paint manufacturers and/or furnished in accordance with specifications stipulated by U. S. Government agencies.