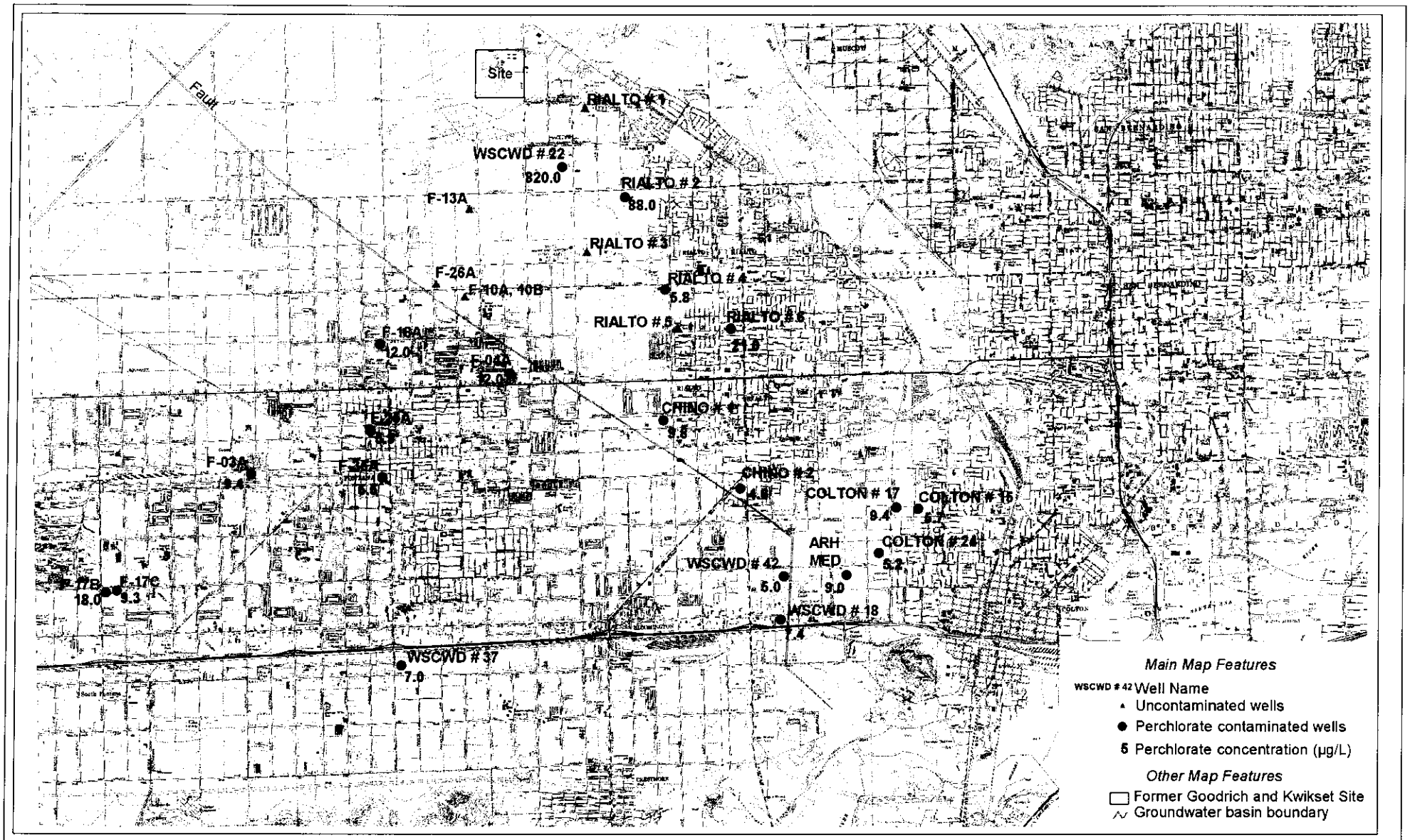
ENCLOSURE 1

Well Location Map showing perchlorate contamination in municipal water supply wells



WELL LOCATIONS AND PERCHLORATE CONCENTRATIONS

ENCLOSURE 2

Facility Construction Agreement for the storage magazines constructed for General Dynamics

GENERAL DYNAMICS, POMONA DIVISION

EXPLOSIVE STORAGE FACILITY CONSTRUCTION

NAVSEA O.P.5

BROCO, Incorporated will provide the following work and materials as listed herein.

1. SITE EXCAVATION
   This includes clear, rough grade, and application of soil sterilant, formation of earthen berms over the magazines, and the placement of four (4) inches of slag as required.

2. INSTALLATION OF BEAMS IN CONCRETE
   BROCO, Incorporated will install eighteen (18) each "H" beams, thirteen (13) feet long, and twenty (20) each "H" beams fifteen (15) feet long in concrete used to construct barricade between storage magazines and front barricade (see DWG 1).

3. INSTALLATION OF RAILROAD TIES
   To be used in the construction of barricade.

4. MAGAZINES
   BROCO, Incorporated will manufacture and place four (4) each PM-90 Storage Magazines, one (1) each PM-80 Storage Magazine, and one (1) each PM-300 Storage Magazine.

5. POWER
   BROCO, Incorporated will provide electrical power to the site, and provide the materials, outlets, etc., as required at the facility.

EXHIBIT A

6. SECURITY SYSTEM

BROCO, Incorporated will install a security system with twenty-four (24) hour monitoring for the site.

7. FENCING

BROCO, Incorporated will install a six (6) foot chain-link fence, with an additional three (3) strand barbed-wire extension around the general Dynamics facility.

SPECIFICATIONS

SIZE

PM 90 8' W x 16' L x 7' H
PM 80 6' W x 8' L x 7' H
PM 300 12' W x 48' L x 7½' H

MATERIALS

Sides, top, bottom and doors are ¼" steel plate. All surfaces coated with water resistant compound. Inside coated with spark resistant paint.

LOCK SHIELDS

Special canister guards to make all locks tamper resistant. Hoisting Eyes.

VENTS

Located for and aft, screened and barred with a 90° bend, with exterior guards and screens to make them tamper resistant.

SUB-FRAME AND STIFFENERS

Fabricated from extra heavy channel steel with 4" "H" beam runners.

FLOORS-INTERIOR

Wood lined for non-sparking surface and ease of cargo movement. Unit to include bolt on wing walls and roof guard.

GENERAL CONSTRUCTION

Strong and braced to withstand weight of earth covering; and coated with asphalt emulsion to resist moisture and rust.

DOORS & FORWARD WALLS

Lined with 5-½ inches of plywood to make this exposed section bullet resistant to the standard 30 caliber military ball round, fired from 200 feet at 2700 feet per second velocity. These magazines are fully welded from ¼ inch steel plate.

AMMUNITION AND EXPLOSIVES ASHORE

SAFETY REGULATIONS FOR HANDLING, STORING, PRODUCTION, RENOVATION AND SHIPPING

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THIS PUBLICATION SUPERSEDES NAVSEA OP 5 VOLUME 1 FIFTH REVISION DATED 1 AUGUST 1990, NAVORD OP 3237 DATED JANUARY 1975

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

1 MARCH 1995

CHAPTER 11

STORAGE

11-1. GENERAL

This chapter organizes storage of ammunition and explosives into three subsections: general storage regulations, specific storage regulations, and inspection and surveillance policies. Under specific storage regulations, magazines and permitted operations within magazines are described. Types of storage include magazine storage, open storage, and temporary storage.

11-1.1. NAVORDCEN COGNIZANCE. The safe storage of ammunition and explosives at Navy and Marine Corps shore activities, regardless of ammunition and explosives ownership, is under the cognizance of NAVORDCEN as delegated by NAVSEASYSCOM. Storage shall conform to the regulations stated in this publication as well as to the safety standards promulgated by the Department of the Navy, and applicable federal, state, and local regulations that are not in conflict with those of NAVSEASYSCOM.

11-1.2 HAZARDS OF LONG TERM STORAGE. Ordnance and other energetic materials may deteriorate in storage. The method of packaging, magazine environment, the length of time the material is stored, the nature of the deterioration, and the explosive compositions used are factors in the rate and criticality of the deterioration. Any deterioration which decreases the stability of the material, thereby increasing the risk of auto-ignition or a handling mishap, is of particular concern. The longer that material is retained in storage, the greater the likelihood that deterioration will occur; therefore, activities shall assure that inventory management programs identify and prioritize older stocks of ordnance and energetic materials for issue or use.

11-1.3. RESPONSIBILITIES OF THE COMMANDING OFFICER. The commanding officer of a Navy or Marine Corps activity has the following responsibilities concerning the safe storage of ammunition and explosives.

11-1.3.1. Site Map of Magazines. The commanding officer shall maintain a site map on file, showing the locations of all magazines and magazine areas. In addition, the file will list the type and construction of magazines, the distances to inhabited buildings on and off the activity, public passenger railways, public highways, navigable channels, and intraline distances to explosive operations. The NAVFACENGCOM building numbers shall be indicated for each magazine. See paragraph 8-8.2 for an explanation of the building identification system requirements. The site map shall be revised as often as necessary to maintain accuracy of the data.

11-1.3.2. Approval for Storage Facilities. The commanding officer of every shore activity shall have on file the appropriate CNO,

NAVSEASYSCOM, NAVORDCEN or NAVORDCEN LANTDIV/PACDIV ESSO approval for all current ammunition and explosives storage sites. He shall obtain approval for any new ammunition or explosives storage sites prior to their construction. All requests for approval of new construction shall include the location and type of construction, proposed use, and distances to inhabited buildings, public highways, passenger railroads, station boundaries, magazines, and other adjacent facilities as appropriate. Refer to paragraph 8-1.2 for additional requirements regarding site plan review and approval. Magazine siting considerations are given in subparagraph 8-2.2.1 through 8-2.2.4.

11-1.3.3. Activities Unrelated to but Affecting Storage. The commanding officer of every shore activity shall obtain site approval for construction of any facilities that are unrelated to ammunition and explosives storage and operations, but may be affected by these storage and operations.

11-1.4. STORAGE OF NON-DOD EXPLOSIVES. Naval activities are permitted, upon authorization of NAVSEASYSCOM, to handle and store ammunition and explosives that are not controlled or owned by the Armed Forces of the United States. The safety precautions required in the handling and storage of ammunition and explosives set forth in this manual shall be observed. Transportation of these items, if required, shall follow the specifications in paragraph 12-4. Requirements for the handling and storage of commercial fireworks are described in paragraph 2-1.11.1.

11-1.5. AMMUNITION AND EXPLOSIVES IN STORAGE. The following regulations apply to ammunition and explosives in storage.

11-1.5.1. Ammunition and Explosives Stored in Containers.

a. Open shipping containers or containers with covers insecurely fastened shall not be allowed in magazines. Ammunition or ammunition components, although packed in individual containers, shall not be stored in magazines unless properly packed in shipping containers with their lids properly secured.

b. Containers of ammunition or explosives shall be clean, dry, and properly marked before being stored.

c. Containers of ammunition or explosives shall not be opened or repaired in a magazine except as described in paragraph 9-4.1.

d. Damaged containers should be repaired or their contents transferred to new or serviceable containers prior to storage in a magazine. If the container is damaged to the extent that safe storage of the contents is compromised, the contents must be transferred to a new or serviceable container.

11-1.6. EMPTY CONTAINER CERTIFICATION. Empty ordnance containers require inspection and must meet the requirements of NAVSEA TW010-AC-ORD-010/020. Upon receipt, all empty containers, regardless of their origin, must be inspected for markings and seals certifying their empty condition. Containers which do not meet these requirements must

ENCLOSURE 3

Lease Agreement and Termination of Lease for use of the storage magazines by General Dynamics

Rialto, CA

ASSIGNMENT OF LEASE

This Assignment of Lease (this "Assignment") is made this 21st day of August, 1992 (the "Assignment Date"), by and between General Dynamics Corporation, a Delaware corporation ("Assignor"), and Hughes Aircraft Company, a Delaware corporation ("Assignee").

R E C I T A L S

A. Assignor and Broco, Inc. ("Landlord") are parties to that certain Lease dated May 1, 1984 (the "Lease"), pursuant to which Landlord leased to Assignor the land, buildings and improvements commonly known as 2610 North Alder, Rialto, CA (the "Premises") for a term that ends on January 31, 1994.

B. Assignor and Assignee are parties to that certain Asset Purchase Agreement, dated as of May 8, 1992, pursuant to which Assignor agreed to sell and assign to Assignee all of the assets of its Air Defense Systems Division and the Unmanned Strike Systems business of Assignor's Convair Division, including Assignor's interest as lessee under the Lease.

C. Assignor desires to assign to Assignee its right, title and interest in and to the Lease, and Assignee desires to accept such assignment and assume Assignor's obligations thereunder.

IN CONSIDERATION OF the terms and covenants set forth below and Ten and no/100's Dollars ($10.00), the receipt and sufficiency of which are hereby acknowledged, Assignor and Assignee agree as follows:

1. Assignment by Assignor.

(a) Assignor does hereby sell, assign and transfer to Assignee all of Assignor's right, title and interest in and to the Lease, from and after the Assignment Date.

(b) Assignor acknowledges and agrees that this Assignment shall not release or relieve Assignor from any liability under the covenants of the Lease, and in the event of a failure of Assignee to perform any of the promises, covenants or agreements contained in the Lease, this Assignment shall not be taken to modify or limit the obligations of Assignor, and Landlord may have such remedies against Assignor in the same manner as if this Assignment had not been made.

(c) Assignor hereby agrees to indemnify, defend and hold harmless Assignee from and against any and all claims,

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losses, liabilities, costs and expenses (including reasonable attorneys' fees and costs) arising from any liability whatsoever relating in any way to obligations under the Lease which accrued prior to the Assignment Date.

2. Acceptance and Assumption of Assignor's Assignment.

(a) Assignee hereby assumes and agrees to make all payments and to perform and keep all promises, covenants, conditions, obligations and agreements under the Lease by Assignor to be made, kept and performed, commencing on the Assignment Date.

(b) Assignee agrees that the taking by Landlord of any remedy against Assignor shall not preclude Landlord from the exercise of such remedy against Assignee, successors or assigns simultaneously with that against Assignor.

(c) Assignee agrees to indemnify, defend and hold harmless Assignor from and against any and all claims, losses, liabilities, costs and expenses (including reasonable attorneys' fees and court costs) arising from any liability whatsoever relating in any way to obligations under the Lease which accrue on or after the Assignment Date. If Assignee defaults in its obligations under the Lease and Assignor pays rent to Landlord or fulfills any of Assignee's other obligations in order to prevent Assignee from being in default or in order to cure any default by Assignee, Assignee immediately shall reimburse Assignor for the amount of rent or costs incurred by Assignor in fulfilling Assignee's obligations under this Assignment or the Lease, together with interest on the amounts paid by Assignor at an annual rate equal to twelve percent (12%), or the highest rate allowed by law, whichever is less.

(d) Assignee agrees that any further assignment or subletting of the Premises is subject to Assignee's obtaining Landlord's consent thereto.

(e) Assignee agrees that the Premises shall be used and occupied for the purposes specified in the Lease and for no other purpose.

(f) The Assignee shall pay to the Assignor on the Assignment Date an amount equal to any deposits, if any, made by Assignor under the Lease, including without limitation any security deposits.

3. Future Amendments. Assignee shall not enter into any agreement with Landlord that amends the Lease without Assignor's consent, unless by its terms such amendment is not binding upon Assignor. Any amendment of the Lease in violation of this provision shall have no force or effect on Assignor.

4. Fees and Costs. If any party commences an action against any of the parties arising out of or in connection with this Assignment of Lease, the prevailing party or parties shall be entitled to recover from the losing party or parties, reasonable attorneys' fees and costs of suit.

5. Successors and Assigns. This Assignment shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

6. Miscellaneous. This Agreement is governed by and shall be construed in accordance with the internal laws of the State of California. No party to this Agreement may assign or delegate any of its rights or obligations hereunder without the written consent of the other party hereto. This Assignment constitutes the entire agreement of the parties hereto and supersedes all previous agreements, promises, representations, undertakings and negotiations between the parties hereto, whether written or oral, with respect to the subject matter hereof. This Assignment may be executed in counterparts, both of which taken together will constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have executed this Assignment as of the date first above written.

Assignor:

GENERAL DYNAMICS CORPORATION,
a Delaware corporation

By: Michael C. Keel
Michael C. Keel
Executive Vice President
Missiles and Electronics
Group

Assignee:

HUGHES AIRCRAFT COMPANY,
a Delaware corporation

By: W. Allen Reed
W. Allen Reed
Vice President and Treasurer

DSH207A5.716

ACCEPTANCE AGREEMENT

This acceptance agreement, executed in duplicate at Rialto, California, this 1st day of December, 1984, by and between Broco, Inc., and General Dynamics, Inc., hereinafter called respectively "Lessor" and "Lessee", without regard to number and gender.

Lessee hereby accepts the construction of the Explosive Storage Facilities pursuant to paragraph 4 of the Lease Agreement. Lessor, per agreement, hereby attaches copies of the "as built" drawings of the Explosive Storage Facilities as replacements for Exhibit "A-1" as modified to paragraph 4.a. of Naval Support Center, Pacific, letter number 810/MEV: lo, SER.2310, dated 7 June 1984.

Rent for the land, magazine and appurtenances referred to in the Lease Agreement commences as of the date of acceptance (Reference A and B of the Lease Agreement).

In witness, whereof, Lessor and Lessee have executed these presents, the day and year first above written.

LESSOR:

By: [signature]

Title President

Attest [signature] 12/7/84

LESSEE:

By: [signature]
Donald K. Bjelke
Assistant Secretary

Title GENERAL DYNAMICS CORPORATION
Pomona Division

Attest [signature] 12-7-84

LEASE AGREEMENT

THIS LEASE, executed in duplicate at Pomona, California this 1st day of May, 1984, by and between Broco, Inc., and General Dynamics, Inc., hereinafter called respectively "Lessor" and "Lessee", without regard to number or gender,

WITNESSETH: That Lessor hereby leases to Lessee, and Lessee hires from Lessor, for the purpose of conducting munitions operations thereon, and for no other purpose, those certain premises with the appurtenances, installed as described in Exhibits "A" and "A-1" (drawings) attached hereto and incorporated herein by reference, with full force and effect, on the land as depicted in Exhibit "B" attached hereto and incorporated herein by reference, with full force and effect, situated in the County of San Bernardino, City of Rialto, State of California, hereinafter called "Premises".

The term of the Lease shall be for ten (10) years commencing not later than thirty (30) days after the date the explosive storage facility is completed, which completion date shall be not later than ninety (90) days from the date this Lease Agreement is signed.

The rent shall be as follows:

A. FOR THE MAGAZINES AND APPURTENANCES REFERRED TO IN EXHIBIT "A": The sum of $555,800.00, lawful money of the United States of America, which Lessee agrees to pay to Lessor, without deduction or offset, prior notice or demand, at such place or places as may be designated from time to time by Lessor. Of this amount, $75,000.00 shall be paid within five (5) days of the signing of this Lease. Further equal monthly installments of $5,405.33 shall be paid for the first five years and $2,608.00 for the second and last five years, in advance, on the first day of each month of the term thereof; rent payable under said Lease should be paid by separate checks drawn in favor of the Lessor, and mailed to the Lessor at the address as follows:

Broco, Inc.
2824 North Locust Avenue
Rialto, California 92376

B. FOR THE LAND: Lessee further agrees to pay on the first of every month rent on the land where the storage units will be located in the amount of $958.00 per month for the term of the Lease. This amount will be adjusted yearly in the same percentage, not to exceed eight percent (8%), as the Consumer Price Index, Los Angeles area, as published by the Research Department of Security Pacific National Bank.

It is further mutually agreed between the parties as follows:

1. USE OF PREMISE: Lessee shall use the demised premise for explosive storage and operations purposes only. Lessee agrees that it shall not use or permit the said premise to be used during the term of this Lease Agreement, for any illegal or immoral purpose and that it shall comply with all laws, ordinances, rules and regulations applicable to its use of said premises. Lessee shall, at its sole cost, comply with any and all requirements, pertaining to the use of said Premises. Lessee agrees to procure and maintain reasonable fire and public liability insurance with coverage limits of $1,000,000.00, which names Lessor as an additional insured, and agrees upon request to provide Lessor with a certificate of insurance covering the operations, the building and appurtenances. Such insurance will be with companies rated "A" or better in Best's Insurance Guide. Insurance policies will provide for notice of cancellation to Lessor of not less than ten (10) days. Notice of renewal or binders will be furnished within a reasonable period of time.

2. Lessee shall not commit, or suffer to be committed, any waste upon said Premises, or any nuisance, or other act or thing which may disturb the quiet enjoyment of any other tenant on the site in which the demised Premises may be located. Lessee shall not make, or suffer to be made, any alterations of the said Premises, or any part thereof, without the written consent

of Lessor first had and obtained, and any additions to, or alterations of, said Premises, except movable furniture and trade fixtures, shall become at once a part of the realty and belong to Lessor. Lessor shall not unreasonably withhold consent from Lessee.

3. Lessee shall not vacate or abandon the Premises at any time during the term; and if Lessee shall abandon, vacate or surrender said Premises or be dispossessed by Process of law, other than condemnation proceedings, or otherwise, any personal property belonging to Lessee and left on the Premises shall be deemed abandoned, at the option of Lessor, except such property as may be mortgaged to Lessor. Provided, however, no default shall occur under this provision unless the vacating or abandonment is coupled with non-payment of rent. This provision shall have no application at any time to government property stored on the Premises. A default shall not occur hereunder until after written notice thereof has been given to Lessee of at least fifteen (15) days for non-payment of rent and thirty (30) days for other acts or omissions constituting default.

4. Upon commencement of the term of this Lease and payment of the rent, Lessee acknowledges that it or qualified personnel of its company will have examined the Premises and accepted the same, in accordance with Exhibit "A" and "B"; and further, that Lessor will maintain said Premises, including weed abatement on an "as needed basis", under a services contract with the Lessee.

5. Lessee agrees to use all reasonable precautions in the operations of such business and to indemnity and hold Lessor harmless from any damage or loss whatsoever by reason of any suit or claim for injury to person or property incurred by any person, firm or corporation either on said Premises or on any other property in the vicinity, growing out of Lessee's said operations with the exception of the negligence of Lessor, its employees, agents or contractors.

6. Lessee shall pay for all water, gas, heat, light, power, telephone service and all other services and utilities supplied to said Premises, shall pay all property taxes when due, and shall pay for all insurance. Lessor will bill Lessee on a quarterly basis for these services and any reasonable maintenance and cleaning expenses that are incurred in maintaining the Premises. Lessor will add and, Lessee agrees to pay a ten (10) percent additional handling and processing fee for any amounts billed pursuant to this paragraph, excluding property taxes and insurance.

7. In the event of total or partial destruction of the Premises, the parties shall attempt to agree on a solution. In the event of any dispute between Lessor and Lessee relative to the provisions of this paragraph, they shall each select an arbitrator the two arbitrators so selected shall select a third arbitrator

and the three arbitrators so selected shall hear and determine the controversy, and their decision thereof shall be final and binding on both Lessor and Lessee who shall bear the cost of such arbitration equally between them.

8. Lessee will not assign this Lease Agreement nor sublet all or any part of the Premises, without the consent of the Lessor, except to its subsidiaries or back to General Dynamics from its subsidiaries.

9. The voluntary or other surrender of this Lease by Lessee, or a mutual cancellation thereof, shall not work a merger, and shall, at the option of Lessor, terminate all or any existing subleases or subtenancies or may, at the option of Lessor, operate as an assignment to them of any or all of such subleases or subtenancies.

10. Any notice, demand or communication under or in connection with this Lease Agreement may be served upon the parties hereto by personal service or by mailing the same by certified mail in the United States Post Office, postage prepaid, addressed to the parties hereto as follows:

Lessee: Mr. Pete Powers
General Dynamics
Post Office Box 2507
Pomona, California 91766

Lessor: Broco, Incorporated
2824 North Locust Avenue
Rialto, California 92376

11. The waiver by Lessor of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of such term, covenant or condition or any subsequent breach of the same or any other term, covenant or condition herein contained.

12. Any holding over after the expiration of the said term, with the consent of Lessor, shall be construed to be a tenancy from month to month, at a monthly rental of $3,566.60, which includes the land, and such amount applicable only to the land as per paragraph B will be adjusted for CPI increases in effect at the time of the hold over, and shall otherwise be on the terms and conditions herein specified, so far as applicable.

13. Lessor may assign all rights under lease, including but not limited to payment by Lessee without counterclaim or offsat, except as provided in this Lease, to Crocker National Bank or its successors. Lessor provides that Crocker National Bank does not assume and is not obligated for any any requirements of the Lessor under the Lease.

14. In the event the Premises herein demised shall be taken by eminent domain proceedings so that the same cannot be used for the purpose aforesaid, this Lease Agreement shall ipso facto cease and determine and the parties released from the executory provisions thereof, provided however, that sale by Lessor under a threat of condemnation shall be treated as a condemnation hereunder.

15. The covenants and conditions herein contained shall subject to the provisions as to assignment, apply to and bind the heirs, successors, executors, administrators and assigns of all the parties hereto; and all parties hereto shall be jointly and severally liable hereunder.

16. Time is of the essence of this Lease and all its provisions.

17. All roadways continguous to and within the demised premised shall remain open and not barricaded or fenced in any way to impede traffic over and across the same.

18. Lessor will provide parking for twelve vehicles for Lessee's use at all times, other than emergencies. Access to the premises will be twenty-four (24) hours a day for both Lessor and Lessee.

IN WITNESS WHEREOF, Lessor and Lessee have executed these presents, the day and year first above written.

LESSOR:

BY: _____ 5/1/84
Paul A. Brower, President

Attest: _____
Secretary

LESSEE:

BY: _____ 5/1/84
Vice President and
General Manager

Attest: _____
Assistant Secretary

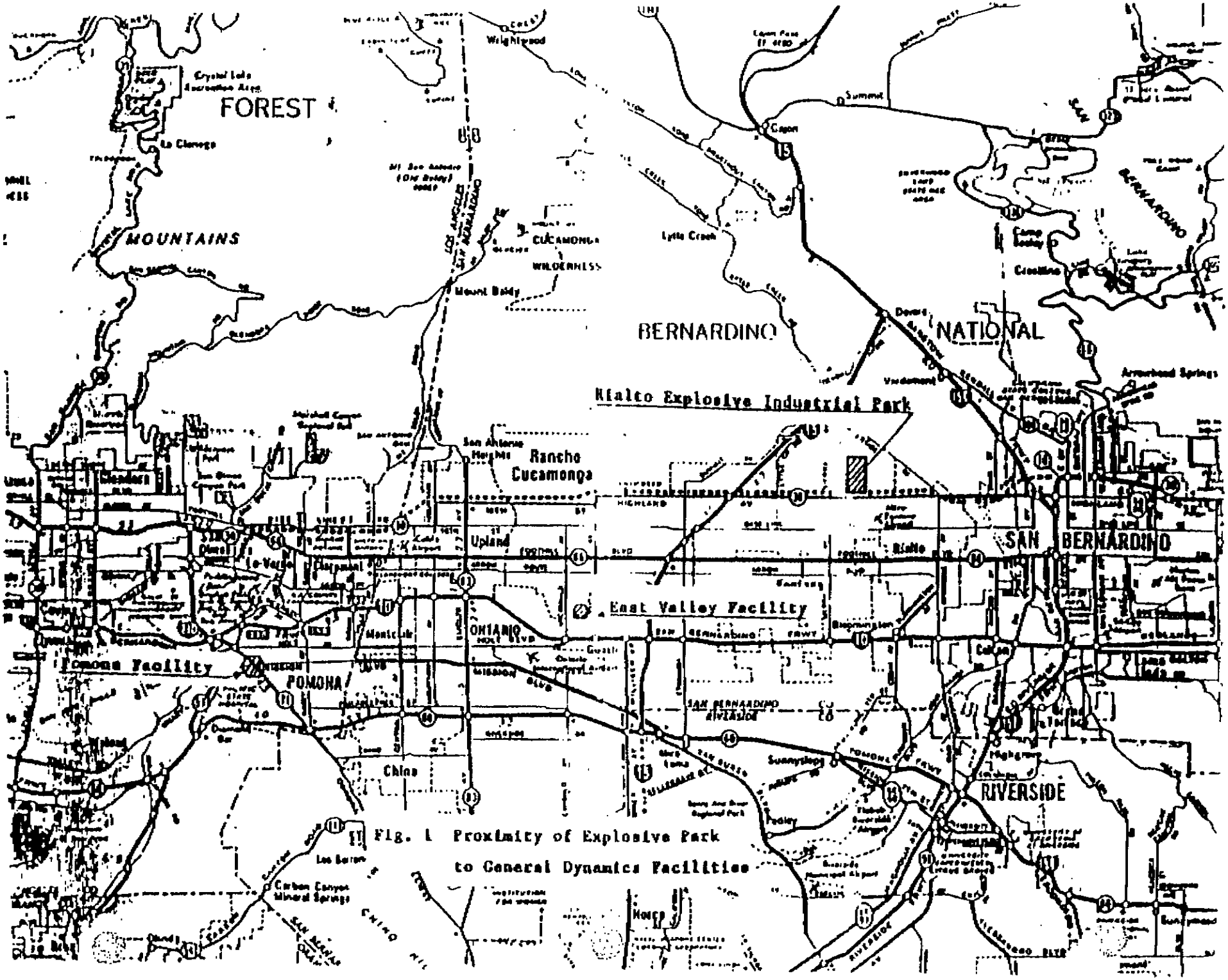

Fig. 1 Proximity of Explosive Park to General Dynamics Facilities

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HUGHES COMMITMENT DOCUMENTS OFFICE

TERMINATION OF LEASE
AND MUTUAL RELEASE AGREEMENT

Building 356, H.L. 1403
Rialto, California

This TERMINATION OF LEASE AND MUTUAL RELEASE AGREEMENT (this "**Agreement**") is made and entered into as of November 28 1994, by and between BROCO ENVIRONMENTAL, INC., a California corporation ("**Lessor**"), and HUGHES AIRCRAFT COMPANY, a Delaware corporation ("**Lessee**").

RECITALS

A. Lessor and General Dynamics Corporation, a Delaware corporation ("GD"), entered into that certain Lease Agreement (the "**Original Lease**") dated as of May 1, 1984 and pertaining to those certain premises commonly known as 2610 North Alder Avenue, Rialto, California (the "**Premises**").

B. The Original Lease has been supplemented by that certain Acceptance Agreement dated December 1, 1984 and fully executed December 7, 1984 and entered into by an between Lessor and GD. The Original Lease as amended by the Acceptance Agreement is referred to herein as the "**Lease**".

C. On August 21, 1992 (the "**Assignment Date**"), GD, as assignor, and Lessee, as assignee, entered into that certain Assignment of Lease whereby GD assigned to Lessee, and Lessee accepted and assumed, all of GD's right, title, and interest in and to the Lease from and after the Assignment Date.

D. The Premises are leased by Lessee for the storage of explosives and include such land, magazines (which magazines contain approximately One Thousand One Hundred Thirty Six (1,136) square feet), and appurtenances as are more particularly described in the Lease.

E. The Lease by its terms is scheduled to expire on November 30, 1994 (the "**Lease Expiration Date**"). Now, however, Lessor and Lessee desire to terminate the Lease prior to the Lease Expiration Date upon the terms and conditions set forth herein.

NOW, THEREFORE, notwithstanding anything to the contrary contained in the Lease, including, without limitation, any provision regarding the amendment or termination of the Lease, and in consideration of the Recitals set forth above, the truth and accuracy of which are hereby acknowledged, and the mutual covenanrs set forth below, Lessor and Lessee hereby agree as follows:

1. Termination of Lease. Subject to the terms and conditions set forth in this Agreement, the Lease and each and all of Lessor's and Lessee's respective obligations thereunder shall terminate as of 11:59 p.m., P.S.T., on September 15, 1994 (the "**Termination Date**").

2. Satisfaction of Lessee Obligations. Notwithstanding Lessor's failure to provide notice or demand of the same, as of the date hereof Lessee shall be deemed to have satisfied in full all monetary and other obligations due Lessor from Lessee under the Lease (collectively, the "Lessee Obligations"), including, without limitation, Lessee's obligations under the Lease with respect to (a) rent, real and personal property taxes, indemnity, insurance, common area maintenance and other maintenance and landscape charges, utilities, and all other operating expenses of every kind and nature, and (b) interest, late charges, penalties, and/or Consumer Price Index adjustments, if any, applicable to all or any part of the Lessee Obligations.

3. Lessor Repayment. Lessor shall, within twenty (20) days of the date hereof, pay to Lessee, without any deduction or set-off, in the form of cash or by cashier's check (which cashier's check shall be drawn upon a bank which maintains branch offices in the State of California), any and all sums paid by Lessee to Lessor which sums are allocable under the terms of the Lease to that period of time commencing from and after September 16, 1994 through the Lease Expiration Date (the "Post-Termination Period"), including, without limitation, any and all sums constituting (or arising out of or related to) Lessee Obligations which sums are allocable to the Post-Termination Period.

4. Condition of the Premises. Lessee shall remove its personal property and trade fixtures from the Premises and surrender the Premises to Lessor in its then-existing condition and configuration, broom-clean, on or before the Termination Date. Lessor agrees to accept the Premises in such condition, without any further obligation on the part of Lessee to make repairs or remove existing improvements.

5. Mutual Release.

5.1 Release of Parties. Except as set forth in Paragraph 6, Lessor and Lessee shall fully, irrevocably, finally, and unconditionally release and forever discharge each other, and each other's partners, successors, assigns, officers, directors, employees, consultants, lawyers, agents, and representatives, from any and all actions, debts, liens, obligations, liabilities, claims, rights, demands, damages, judgments, losses, costs, and expenses of every kind and nature whatsoever, known or unknown, suspected or unsuspected, fixed or contingent, arising from, incidental to, based upon, or related to the Lease, whether before or after the termination of the Lease.

5.2 Unknown Claims. Lessor and Lessee acknowledge that there is a risk that subsequent to the execution of this Agreement, it party may discover, incur, or suffer from claims which were unknown or unanticipated at the time of entering into this Agreement, including, without limitation, unknown or unanticipated claims which arise from, are based upon, or are related to the matters described hereunder and which, if known by such releasing party as of the date hereof, may have materially affected its decision to execute this Agreement. Each of Lessor and Lessee acknowledges that it assumes the risk of such unknown and unanticipated claims and agrees that this Paragraph 5 applies thereto. Each of Lessor and Lessee expressly waives the benefits of Section 1542 of the California Civil Code, which reads as follows:

> "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

Lessor's Initials: _____ Lessee's Initials: _____

In addition, Lessor and Lessee expressly waive and relinquish the benefit of any similar statutes, principles of common law, or decisional law of any and all other states or of the United States.

6. Hazardous Materials.

6.1 Lessee's Obligations. Notwithstanding any provision to the contrary contained in the Lease, Lessor's sole remedy against Lessee with respect to any release of Hazardous Materials in, on, under, or about the Premises shall be to remediate, on a basis and in accordance with remediation plans prepared by Lessee satisfactory to the applicable regulatory agencies and on a basis consistent with applicable law, any release of Hazardous Materials in, on, under, or about the Premises which is required to be so remediated under applicable law; provided, however, that notwithstanding the foregoing, (a) Lessee's obligations hereunder shall exclusively apply only to the extent that the Hazardous Materials in question were released by Lessee and were not released by any other party, person, or entity, (b) Lessee shall not be responsible for any current, pre-existing, or future contamination of the Premises by, or release in, under, or about the Premises of Hazardous Materials to the extent such contamination did not result from the acts of Lessee or Lessee's agents, employees, or contractors, and (c) Lessee shall have no obligation to pay or reimburse Lessor for (or otherwise bear) any expense, cost, or liability to the extent such contamination did not result from the acts of Lessee or Lessee's agents, employees, or contractors. In those instances where Lessee has a duty to remediate pursuant to this Paragraph 6.1, Lessee shall commence the process of such remediation with reasonable promptness following the receipt of written notice from Lessor or any applicable regulatory agency of the governmental requirement for such remediation, and thereafter shall pursue such remediation to completion with reasonable promptness.

6.2 Conduct and Supervision at Remediation.

(a) In any case where Lessee is required pursuant to Paragraph 6.1 to remediate (or bear the cost of remediating) any Hazardous Materials in, on, under, or about the Premises, (a) Lessee shall be permitted, subject to reasonable participation by Lessor, to supervise the investigation of the nature and extent of the release of Hazardous Materials in question, (b) Lessee shall be permitted, subject to reasonable approval of Lessor, to structure and negotiate the remediation plan to be submitted to and approved by the governmental authorities having jurisdiction, and (c) Lessee shall be permitted, subject to reasonable participation by Lessor, to supervise the actual remediation. In connection with the foregoing, Lessee shall be provided, without charge, with reasonable access at reasonable times to all portions of the Premises possibly relevant to the foregoing activities.

(b) Notwithstanding the termination of the Lease provided for in this Agreement, in any case where Lessee is required to remediate any Hazardous Materials in, on, under, or about the Premises pursuant to this Paragraph 6, Lessee shall have, and Lessor hereby grants to Lessee and to Lessee's agents, employees, contractors, and representatives, an irrevocable license and right of entry (which the parties hereto agree is coupled with an interest in the Premises) in, on, under, and over such portions of the Premises as shall be reasonably required to investigate any release of Hazardous Materials in, on, under, or about the Premises or to pursue any remediation or other activities contemplated under this Paragraph 6.

6.3 Limitations of Lessee's Obligations. In the event any release or other contamination by Hazardous Materials occurs or has occurred in, on, under, or about the Premises other than those for which Lessee assumes responsibility pursuant to Paragraph 6.1,

(a) Lessee shall have no responsibility or liability whatsoever to Lessor or to Lessor's successors, assigns, tenants, subtenants, lenders, mortgagees, or employees, or any other person or entity claiming under any of the foregoing with respect to the existence or remediation of such Hazardous Materials, contamination, or release, and (b) Lessor shall indemnify, defend (with counsel satisfactory to Lessee), and hold Lessee harmless from all claims, actions, losses, damages, demands, obligations, judgments, and liabilities asserted by governmental authorities, adjacent and successor landowners, tenants, and others arising therefrom or related thereto.

6.4 Definition of Hazardous Materials. "Hazardous Materials" shall mean any hazardous, explosive, radioactive or toxic substance, material, or waste which is or becomes regulated by any local governmental authority, the State of California, or the United States, including, without limitation, any material or substance which is (a) defined or listed as a "hazardous waste," "extremely hazardous waste," "restricted hazardous waste," "hazardous substance," "hazardous material," "pollutant", or "contaminant" under any law, rule, regulation, or ordinance, (b) petroleum or a petroleum derivative, (c) a flammable explosive, (d) a radioactive material, (e) a polychlorinated biphenyl, (f) asbestos or an asbestos derivative, (g) urea formaldehyde foam insulation, or (h) radon gas.

6.5 Notice and Access to Lessor's Records. Lessor shall promptly notify Lessee (a) of any release of Hazardous Materials in, on, under, or about the Premises, or (b) of any notice received by Lessor from any applicable regulatory agency, any tenant of the Premises, or any owner or tenant of any adjacent property, regarding the existence or release or suspected existence or release of any Hazardous Materials in, on, under, or about the Premises. In connection with any notice given by Lessor to Lessee pursuant to this Paragraph 6.5, Lessor shall grant to Lessee, without charge, full and complete access during normal business hours to all files, books, and records of Lessor regarding, or otherwise relating to, the existence or release or suspected existence or release, and the use, storage, handling, manufacture, transport, and remediation of Hazardous Materials in, on, under, or about the Premises.

6.6 Other Lessees and Users. Lessor shall comply, and shall use reasonable efforts to cause each tenant or other occupant of the Premises from and after the Termination Date to comply, with all applicable laws and sound industry practice governing the use, storage, handling, manufacture, transport, remediation, and release of Hazardous Materials in, on, under, or about the Premises.

7. Representations.

7.1 Representations of Lessee. Lessee hereby represents and warrants to Lessor as follows:

7.1.1 Authority. Lessee has the full right and authority to enter into this Agreement and the transactions contemplated herein; and the person signing this Agreement and any other document or instrument contemplated hereby on behalf of Lessee is duly authorized to do so. This Agreement and all other documents executed by Lessee in connection herewith are legal, valid, and binding obligations of Lessee and are enforceable against Lessee in accordance with their respective terms.

7.1.2 Ownership of Leasehold. Lessee represents that it is the present sole owner of the Lessee's interest in the Lease, and that it has not made any assignment, sublease, transfer, conveyance, hypothecation, or other disposition of the Lease, or any interest therein, and that to the best of its knowledge, without inquiry, Lessee has not suffered or created

8.6 Severability. If any provision of this Agreement is determined by a court of competent jurisdiction to be invalid or unenforceable, the remainder of this Agreement shall nonetheless remain in full force and effect.

8.7 Entire Agreement. This Agreement contains the entire agreement between the parties hereto with respect to the subject matter hereof. This Agreement supersedes all prior and contemporaneous agreements and understandings between and among the parties hereto, and there are no other agreements or representations between or among the parties hereto except as set forth herein.

8.8 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument. Where this Agreement has been signed in multiple counterparts, the signature page of such instrument may be detached and reattached to any other which is identical in form.

IN WITNESS WHEREOF, Lessor and Lessee have caused this Agreement to be signed as of the day and year first written above.

Lessor:

BROCO ENVIRONMENTAL, INC.,
a California corporation

By: _____
Name: EDWARD H. KOBBE
Its: VICE PRESIDENT

Lessee:

HUGHES AIRCRAFT COMPANY,
a Delaware corporation

By: _____
Name: M. K. Esposito
Its: Director of Real Estate

THIS PAGE MUST BE KEPT AS THE LAST PAGE OF THE DOCUMENT.

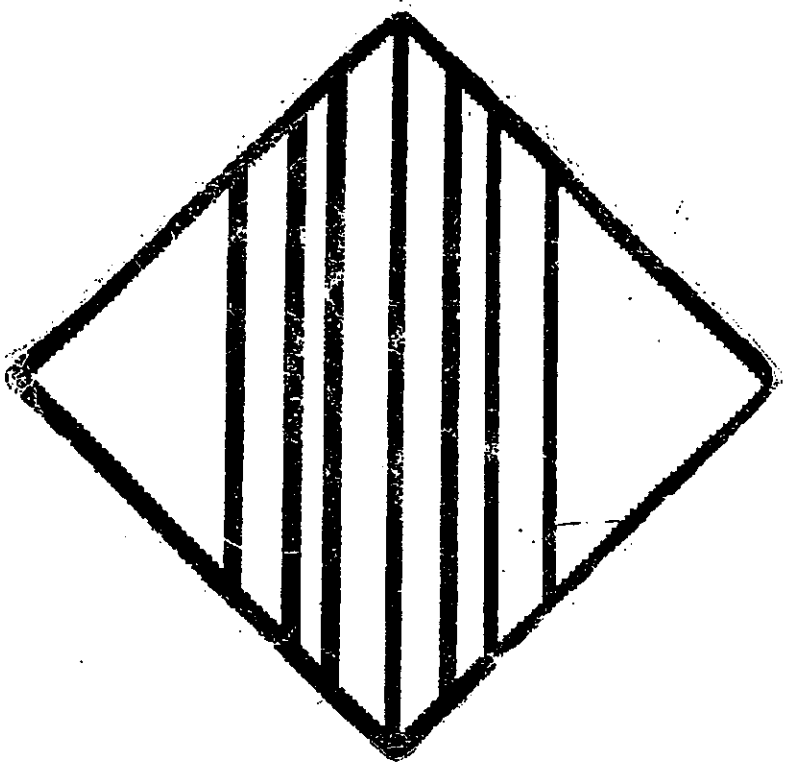
SoftSolution Network ID: LA-REL:R51721.3 Type: AGR

ENCLOSURE 4

Log record of on-site explosives testing for General Dynamics

COPY

BROCO
BINDER 4



SBCHMD

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JOB NO		GENERATOR	MFST. #	TRANSPORTER	REV. DATE	DISP DATE
419	17	Great West	92346011	Stamco/HSR	11-11-92	
	18					
	19	MEDTRONICS INC	90830023	INDUSTRIAL WASTE	12/2/92	
419	20	Air Logistics	90822951	PFR	11-16-92	
	21	BFM ENERGY	92800677	ADVANCED ENVIRO	11/24/92	
419	22	LA Bur of Sanit	92228949	Greenfield	11-16-92	
	23					
	24	PATTERSEN ASSOC	91659598	NO STATE	11/24/92	
419	25	CARDIOMETRICS	92366436	SERVICON	11/25/92	
	26					
	27	CHABOT COLLEGE	92473621 / 92473679	NO STATE ENVIRO	12/07/92	
	28	LAS POSITAS COLLEGE	92473637 / 92473632	NO. STATE ENVIRO	12/07/92	
	29	UNIVERSAL STUDIOS	92000793	ENVIRONMENTAL RECOVERY	12/1/92	12/1/92
419	30	JPL	92246805	Findly	11/19/92	3/19/92
	31	REDKEN LABS	92480944	MARTIN PUMPING	11/25/92	
	32					
	33	NORTHROP UNIV.	92127508	PREMIER	11/19/92	
	34	CAL. POLY STATE UNIV	92473678 / 92473679 / 92473680	NO STATE ENVIRO	12/21/92	
419	35	GEN'L DYNAMICS	88389904	BROCO	11/20/92	
	36					
	37					
	38	PALO VERDE SCH. DIST	91814511	H.V. TRANSPORT	11/24/92	
	39	UTV/KHBK-TV/SANFRAN	92473637	NO STATE ENVIRO	12/07/92	
419	40					
	41					
	42	NORTHROP UNIV	92127529	PREMIER TRUCKING	11/25/92	
	43					
	44					
419	45	AEROSPACE CORP	91684051	FINDLY CHEM	12/1/92	12/2/92
	46					
	47					
	48	San Diego Blood Bank	92233890	ADCOM EXPRESS	12/11/92	
	49	TMO BARKDALE CONTROLS	92684885	A/S METAL RECYCLING	12/21/92	1/28/93
419	50	SAN FRANCISCO UNIV	92473656	NO STATE ENVIRO	12/07/92	
419	51	Santa Clara U	92346030, 31, 32, 33	Stamco/HSD	12/21/92	2/22/93
		" "	92081710			

SBCHMD 006130

JOB	GENERATOR	MANIFEST	HAULER	STATUS	Rec'd	REMARKS
40545	UCLA	87100755	Findley	Pend	12/3	3108
40546	VA Med Ctr	87100784	↓		12/3	3108
40547	Duarte Ind	87190342	N. STATE	Pend	12/8	3108
40548	PATEC	TEST SITE Rental				
40549	PATEC	on site storage	Draco	Completed		Class A
40550	LA P.D.	87421440	Containerized	Pend	12/9	12/09/88
40551	Montebello School	87515008	Sentinel	Pend	12/11	2/5/88
40552	U.S. Borax	87713128	Findley	Pend	3-3-88	3038
40553	PATEC	TEST SITE RENTAL				
40554	Aerospace Corp	87100867	Findley	Pend	12/17	4/18/8
40555	Beckman	87100641	↓	Pend	12/17	2258
40556	Antelope-Schools	87100641	Mini Ren			3108
40557	ARMTEC	87025031	Findley	Pend	12/17	2098
40558	Univ of Washington	87740892	TecRep	Pend	12/18	12158
40559	Oregon State U.	87140885	↓	↓	↓	12158
40560	Hutchinson Cancer	87140911	↓	↓	↓	12298
40561	Univ of Oregon	87014187	↓	↓	↓	12298
40562	GD	TEST - SITE RENTAL				
40563	City of S.F.	87027456	C+O	Pend	12/23/87	2.5.88
40564	Explosives Services - Technician					
→ 40556	TARRANCE School	87570267	Mini Ren	Pend	12/28	3108
40556	Antelope School	87570266	↓	↓	↓	3108
40556	ALHAMBRA School	87570265	↓	↓	↓	3108
40556	SANTA ANA School	87570248	↓	↓	↓	3108
40565	ALZA Corp	87026742	CAL Solvent	Pend	12/29	2098
40566	USC	87100787	Findley	Pend	12/30	2258
40567	Explosives Svcs - Leighton & Assoc.					
40568	UC Santa Cruz	87190410	NORTH-STATE	Pend	1/11	5/9
↓	Barnes Hind	87190407	↓	Pend	↓	2258
↓	[illegible]	87190409	↓	Pend	↓	
40569	Multiple	87418737	American Envirn	Pend	1/7/88	3108
40570	U.C. IRVINE	87100954	Findley	Pend	1/8/88	Dt 1/8/88
40571	ARCO Solar	87100943	Findley	Pend	1/13/88	2098
40572	Cedars-Sinai	87100929	↓	↓	↓	3108
40573	Cal State S.B	87100936	↓	↓	↓	3/10/88
40574	VA Med Center	87100947	↓	↓	↓	3108

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JOB #	GENERATOR	MANIFEST #	HAULER	STATUS	Recd	Remarks	
402 79	JPL	8657446 2	Findley	Pending	11/6/86	81-12/11-19	1
402 80	McDonnel Douglas	8479181 2	DCS	Pending	10/24/86	2098	2
402 81	Eureka Savings	8650201 4	IT Corp	Pending	12-2-86	[illegible]	3
402 82	Cancelled		IT Corp				4
402 83	Dynta Health	8650201 5	IT Corp	Pending	12-2-86	2095	5
402 84	Leighton + Assoc	Explosives Services		Seismic Study			6
402 85	PATECH Site Rental	Explosives Services			10/24/86		7
402 86	Hi-Shear Cancelled			OPEN		Closed	8
402 87	+ Cancelled		Crosby	AH			9
402 88	Fireman Hospital	8432445 2	Broco	Pending	10/31/86	11/12/86	10
402 89	CAL TECH	See MANIFEST 402 67	Findley	Pending	11/6/86	11/12 + 11/14	11
402 90	Santa Barbara Research	8657447 3		Pending	11/6/86	11/12/86	12
402 91	Durber Scientific	8657944 5 4		Pending	11/6/86	11/14	13
402 92	Repordine Cancelled			OPEN			14
402 93	R+R	8444806 6	R+R	Pend	11/14/86	11/12	15
402 94	S.D.S.U - San Diego	8629106 2 8629106 4	Broco	Pending	11/26/86	2095	16
402 95	Deutsch	8627091 4	Broco	Pending	11/26/86		17
402 96	McDonald Douglas	8649976 8	IT Corp	Pending	11-14-86	3/21/91	18
402 97	Northrop 863 34315	8633433 5 5	Pacific Chemical Broco	Pending	12-4-86	10/8/ 12/4	19
402 98	UC San Francisco	8445815 8	North State	Pending	12-3-86	12/1/7	20
402 99	SDG+E - Repair	MARK IV Reel	Explosives	Services			21
403 00	Huntington Beach Schools	8466943 3 8613283 3	Disposal	Pending	11-24-86 11-25-86	3/21/91	22
403 01	NORTHROP	8446319 7	Broco	Pending	12-5-86	E 2098 B+C	23
403 02	Monterey County Schools	SEE 6 MANIFESTS BELOW	Mini-Rem	Pending			24
403 03	GD Test Site Rental						25
403 04	Ridel — HMD Consultations						26
403 05	Gen Dynamics - Explosive Services		Under WHS Contract # 01007		1/18/86		27
403 06	UNOCAL	8657456 4	Findley	Pending	10/14/86	12/1/7	28
40302	Gonzales HS	8619505 7	Mini Rem	Pending	11/19/86	12/11/7	29
40302	Hartnell College	8619506 3				12/11/7	30
40302	San Benito HS	8619505 8					31
40302	King City HS	8619506 5					32
40302	King City School Dist	8619499 5					33
40302	Carmel School Dist	8619506 0					34
403 07	PATECH — Test Site Rental						35
							36

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	JOB #	GENERATOR	MANIFEST #	HAULER	Status	Rec'd	Remarks
1	402	44 Cancelled		Ecology Control	OPEN		
2		45 ALLERGAN	8675492 3/3	FINDLY	Pending	12/8/86 10/10/86	3/13 out 11/14 + 16 Out
3		46 Gen Dynamics - ON SITE Explosive Services					
4		47 R+R WASTE	8447244	R+R	Pending	9/26/86	12/19/86
5		48 De Lamare	Explosive Svcs	De Lamare	PARTIAL REC'D	9/18/86	Explosives Disp
6		49 TRW	8498965 4	Crosby	Pending	9/17/86	4/23/92
7	402	50 Leighton + Assoc	Explosives Services - Seismic Svcs				
8		51 GD - Explosive Services - Transportation					
9		52 Geo Tech - Explosives Services					
10		53 Solar Turbines	8441834 0	BROCO	Pending	10/2/86	Oct 86
11		54 TREVINAL LABS	8612404 5	CAL-Chem Disposal	Pending	11-17-86	12/18/7
12		55 MICRONICS	8432445 3	BROCO	Determined SCARD 4/4/84 OPEN Pending	10/4/86	Closed 11/14
13	402	56 Fowman School	Cancelled	CHEMKAN	OPEN		
14		57 Nogales H.S.	Cancelled		OPEN		
15		58 SOS Explosive Services - TRANSFER - CLASS B					
16		59 NOROC - Explosive Services - Testing					
17	402	60 CAL BIONUCLEAR	8621562 6	BROCO	Pending	10/7/86	Oct 86
18		61 FRESNO COUNTY	8409684 6	PIC	Pending	10/7/86	Oct 86
19		62 FORD AEROSPACE	8493304 0	BROCO	Pending	10/7/86	12/10/7
20		63 SADDLEBACK College	8475492 7	FINDLY	Pending	10/9/86	Oct 86
21		64 GORDON CARTER	8475304 4		Pending	10/9/86	Oct 86
22		65 SIBIA	8475484 9		Pending	10/9/86	12/10/7
23		66 Riverside General Hosp	8475489 3		Pending	10/9/86	12/10/7
24	402	67 CAL TECH	8057417 6	FINDLY	Pending	11/6/86	11-12 + 11-14.
25		68 UNOCAL	8432445 4	BROCO	Pending	10/10/86	Oct 86
26	402	69 GEN DYNAMICS	Explosive Services - TEST SITE Rental			8/18/86	Closed 10/23/86
27	402	70 McRESSEN (2) ZERO	8502508 4 / 8502508 5	ZERO WASTE	Pending	10/24/86	10/31
28	402	71 TRW - Explosives Services					
29	402	72 City S.F. (2)	8445808 1 / 8445808 2	NORTH STATE	Pending	10/23/86	11-6, 11-12 + 11-14
30	402	73 North State - CANCELLED					
31	402	74 Central School	8619497 9	Mini-Ram	Pending	10/27/86	2/11/7
32	402	75 Hacienda School	8619503 9	Mini Ram	Pending	10/27/86	12/4/87
33	402	76 Stone Wilton NEV	8502480 7	Zero Waste	Pending	10/24/86	11/3
34	402	77 SANTA BARBARA RESEARCH	CANCELLED	Findley	OPEN		
35	402	78 NETWORK	8602300 4	NETWORK	PENDING	11-5-86	12/11/87 Class C
36							

SBCHMD

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JOB		GENERATOR	MANIFEST	Hauler	STATUS	Rec'd	REMARKS	
401	55	American Edwards	847449 53	Findley	Pending	4/25/86	Mar 86	1
		Brunswick School	847445 [illegible]					2
		MGC	847449 8[illegible]					3
		JPL	847449 [illegible]					4
		U. J. Rollands	847449 58					5
	56	Hot Lasers - Exploratory Services						6
	57	~~Stanford Univ Rental~~						7
401	58	Nat'l Prop	843631 92	Broco	Pending	4/25/86	April 86	8
	59	~~[illegible]~~	Change to 840326					9
	60	Omni Int'l	846935 58	Crosby	Pending	4/21/86	April 86	10
	61	N.T.C. Fibers	843909 71	Clint	Pending	4/4/86	July 86	11
	62	Vitamineraals	843244 63	Broco	Pending	5/7/86	May 86	12
	63	Techni-Cast	843244 62	Broco	Pending	5/1/86	May 86	13
	64	Covina School	848537 85	N. American	Pending	5-15-86	May 86	14
	65	Elaine School	848123 73	Inland Waste	Pending	5/8/86	May 86	15
	66	McDonnell Douglas	None		Pending	Sep 86	Clean B	16
	67	GD ~~Test Site Rental~~						17
	68	Long Beach City Dept Sch	847016 85 847019 88	CROSBY	Pending	5/30/86	May 86	18
401	69	C. Cancelled		N. AMERICAN	OPEN	5/[illegible]		19
	70A	Allergan	847449 87	FINDLEY	Pending	5/2/86	May 86	20
		JPL	847450 69				May 86	21
		BAZTECH	847450 98				May 86	22
	70B	U.S. Salinity Lab	847450 95				May 86	23
401	71	Dept of Justice	840105 47	DCS	Pending	5/16/86	May 86	24
	72	Dept of Justice	846750 00	DCS	Pending	5/19/86	May 86	25
	73	City of Burbank	847942 06	CROSBY	Pending	5/27/86	May 86	26
	74	Network Electronics	843244 58	Broco Waste Industrial	Pending	6/13/86	Clean A Dirty B July 86	27
	75	CANCELLED 1-27-87			OPEN			28
	76	~~GD Test Site Rental~~						29
	77	Brunswick - Exploratory Services - CASTING WAX Heads						30
401	78	Arcadia School	843640 47	Minirem	Pending	6/5/86	July 86	31
	79	Torrance School	843641 28	Minirem	Pending	6/20/86	July 86	32
401	80	CAL Almond	861949 59	Minirem	Pending	8/13/86	Disposal 8/16	33
Left Out	81	Excel Mineral	864924 23	I.T	Pending	6/10/86	July 86	34
	82	Hughes	848623 61	Broco	Pending	6/12/86	July	35
								36

SBCHMD 0060078

ENCLOSURE 5

Copies of Hazardous Material Handler Permits for 1992 & 1993; Renewal Applications and Invoices; January 17, 1991 San Bernardino County EHS Hazardous Waste Generator Inspection Report; MSDS pages for chemicals in the storage magazines

COPY

SBCHMD

ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

COUNTY OF SAN BERNARDINO, CALIFORNIA

GENERAL DYNAMICS
2824 N LOCUST
RIALTO, CA 92376
EST - 91023726 PERMIT - 9104170003

THIS PERMIT EXPIRES:
03/31/93

PERMIT

NON-TRANSFERABLE

This permit may be suspended or revoked by the health officer for cause. This permit is granted on condition that the person named in the permit will comply with the laws, ordinances and regulations that are now or may hereafter be in force by the United States Government, the State of California and the County of San Bernardino pertaining to the above mentioned business. Penalty fees are assessed on permits renewed 30 days after expiration date indicated above, or for failure to obtain new permit in case of transfer of ownership.

TYPE OF PERMIT - HAZARDOUS MATERIAL HANDLER, 0-10 EMPLOYEES

FEE PAID $190.00

MILLER, DON
DBA: GENERAL DYNAMICS
P O BOX 50800
ONTARIO, CA 91761-1085

Richard S. Roberts
Director
ENVIRONMENTAL HEALTH SERVICES

04-1804631 REV. 3/85

PERMIT DOES NOT IMPLY APPROVAL

POST IN A CONSPICUOUS PLACE

0002929

MONT...

COUNTY OF SAN BERNARDINO, CALIFORNIA
DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES
INVOICE

PAGE 1
BILL DATE 02/28/92
HEALTH PERMIT EXPIRATION DATE 03/31/92

*** REMIT COPY ***

ESTABLISHMENT NBR 91023726

MILLER, DON
DBA: GENERAL DYNAMICS
P O BOX 50800
ONTARIO, CA 91761-1085

GENERAL DYNAMICS
2824 N LOCUST
RIALTO, CA 92376

PERMIT NBR	CATEGORY	DESCRIPTION	BILL CODE	AMOUNT
910[illegible]003	226009	PREVIOUS BALANCE		0.00
		HAZARDOUS MATERIAL HANDLER, 0-10 EMPLOYEES	101	190.00
		PERMIT TOTAL		190.00
		TOTAL DUE		190.00

APR 0 6 1992

ALL FEES ARE NOW DUE AND PAYABLE. FAILURE TO PAY WITHIN 30 DAYS AFTER THE EXPIRATION DATE OF YOUR CURRENT PERMIT WILL RESULT IN THE ASSESSMENT OF A DELINQUENT FEE. DO NOT SEPARATE THESE FORMS. REVIEW, UPDATE, AND SIGN THE ATTACHED RENEWAL APPLICATION(S). RETURN REMIT COPY OF THE INVOICE AND APPLICATION(S) WITH REMITTANCE TO: ENVIRONMENTAL HEALTH SERVICES
385 N. ARROWHEAD AVENUE
SAN BERNARDINO, CA 92415-0160

IF YOU HAVE QUESTIONS CONCERNING YOUR BILLING PLEASE CALL:

FOOD ESTABLISHMENT PERMITS -- 387-4637
SWIMMING POOL PERMITS -- 387-4637
MILK & DAIRY ESTABLISHMENTS -- 387-4608
HAZARDOUS OR INFECTIOUS
WASTE GENERATORS -- 387-3080
UNDERGROUND STORAGE
TANK PERMITS -- 387-3080
HAZARDOUS MATERIAL HANDLER
PERMITS -- 387-3044

MOBILEHOME PARK PERMITS -- 387-6515
MOTEL, CAMP, MASSAGE PARLOR PERMITS -- 387-6515
HOME OCCUPATION PERMITS -- 387-6512
TEMPORARY OFFICES/SIGNS -- 387-6512
REFUSE HAULERS -- 387-4655
REFUSE DISPOSAL SITES -- 387-4655
DESIGNATED MAINTENANCE AREA -- 387-4666
WATER SYSTEMS -- 387-4666
WELL DRILLERS -- 387-4666
SPECIAL USE PERMITS -- 387-6512

DATE 3-31-92
AMOUNT $190
RECEIPT NO. R-714175
BY: [illegible]

PAID

PAID
Amt. 190.00
Date 3-31-92
By CE

THIS FORM MUST BE RETURNED WITH YOUR REMITTANCE

SBCHMD 0029300

DUPLICATE

Office DEHS San Bernardino County No. 714175

SB, Calif., 3-31 1992

RECEIVED FROM General Dynamics $ 190.-

One Hundred Ninty and no/100 DOLLARS

Court _____ Case Name _____ vs. _____

NATURE OF FEES		
572-226009	190	—
#0023		
☐ CASH ☑ CHECK ☐ MONEY ORDER	190	—

Case No. EST# 91023726

(SIGNATURE)

ET-II

(TITLE)

01-188A-123 REV. 3-80

10-83

ICES

CES

THE PRE-PRINTED INFORMATION

AS LEGAL OWNER

085

NUMBER OF EMPLOYEES: 1

OFFICE USE ONLY 10
EST NBR 91023726
PERMIT NBR 9104170003
FORMER EST NBR _____
PERMIT CATEGORY 226009
EXPIR DATE 03/31/92
NEW, TRANS, RENEW T
LOC CODE 63
SANI DIST 0500
MFR NBR
APN
PERMIT FEE _____
STATE FEE _____
DELINQUENT FEE _____
TOTAL FEE REC'D 5190

I HEREBY MAKE APPLICATION FOR HEALTH SERVICES AND PERMIT TO ESTABLISH AND/OR OPERATE THE ABOVE MENTIONED BUSINESS, USE, OR SERVICE IN ACCORDANCE WITH THE LAWS, ORDINANCES, AND REGULATIONS THAT ARE NOW OR MAY HEREINAFTER BE IN FORCE BY THE UNITED STATES GOVERNMENT, THE STATE OF CALIFORNIA, AND THE COUNTY OF SAN BERNARDINO PERTAINING TO THE ABOVE MENTIONED BUSINESS. I HEREBY CONSENT TO ALL NECESSARY INSPECTIONS INCIDENT TO THE ISSUANCE OF THIS PERMIT AND THE OPERATION OF THE BUSINESS.

SIGNED [signature] DATED 3/31/92 TITLE Explosives ~~[illegible]~~ coordinator

NOTICE: ALL FEES ARE DUE AND PAYABLE WITHIN 30 DAYS. FAILURE TO PAY WILL RESULT IN THE ASSESSMENT OF A DELINQUENT FEE. APPLICATION AND FEE MUST BE SUBMITTED PRIOR TO OPERATION BY ANY NEW OWNER, OR A DELINQUENT FEE WILL BE CHARGED.

THIS FORM MUST BE RETURNED WITH YOUR REMITTANCE

SBCHMD 00293

MONTHLY

RENEWAL APPLICATION FOR HEALTH PERMIT INSPECTION AND HEALTH SERVICES

SAN BERNARDINO COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES
385 N. ARROWHEAD AVE., SAN BERNARDINO, CA. 92415-0160

PLEASE REVIEW THE FOLLOWING INFORMATION CAREFULLY. MAKE CORRECTIONS DIRECTLY ON THE FORM BY CROSSING OUT THE PRE-PRINTED INFORMATION AND ADDING THE CHANGES. *** PLEASE PRINT. ***

ESTABLISHMENT INFO GENERAL DYNAMICS
2824 N LOCUST
RIALTO, CA 92376

LEGAL OWNER INFO MILLER, DON
(714) 945-8680 P O BOX 50800
ONTARIO, CA 91761-1085

< > CHECK HERE IF APPLICANT IS SAME AS LEGAL OWNER

APPLICANT INFO MILLER, DON
(714) 945-8680 P O BOX 50800
ONTARIO, CA 91761-1085

IS THIS A TRANSFER? NO

IF YES: FORMER ESTABLISHMENT NAME OK
FORMER OWNER

IMPORTANT: ALL CORRESPONDENCE SHOULD BE SENT TO: ___ESTABLISHMENT ADDRESS ___LEGAL OWNER ✓ APPLICANT

NUMBER OF EMPLOYEES: 1

OFFICE USE ONLY 10
EST NBR 91023726
PERMIT NBR 9104170003
FORMER EST NBR
PERMIT CATEGORY 226009
EXPIR DATE 03/31/92
NEW, TRANS, RENEW T
LOC CODE 63
SANI DIST 0500
MFR NBR
APN
PERMIT FEE
STATE FEE
DELINQUENT FEE
TOTAL FEE REC'D 195

I HEREBY MAKE APPLICATION FOR HEALTH SERVICES AND PERMIT TO ESTABLISH AND/OR OPERATE THE ABOVE MENTIONED BUSINESS, USE, OR SERVICE IN ACCORDANCE WITH THE LAWS, ORDINANCES, AND REGULATIONS THAT ARE NOW OR MAY HEREINAFTER BE IN FORCE BY THE UNITED STATES GOVERNMENT, THE STATE OF CALIFORNIA, AND THE COUNTY OF SAN BERNARDINO PERTAINING TO THE ABOVE MENTIONED BUSINESS. I HEREBY CONSENT TO ALL NECESSARY INSPECTIONS INCIDENT TO THE ISSUANCE OF THIS PERMIT AND THE OPERATION OF THE BUSINESS.

SIGNED [signature] DATED 3/31/92 TITLE Explosives ~~Manager~~ coordinator

NOTICE: ALL FEES ARE DUE AND PAYABLE WITHIN 30 DAYS. FAILURE TO PAY WILL RESULT IN THE ASSESSMENT OF A DELINQUENT FEE. APPLICATION AND FEE MUST BE SUBMITTED PRIOR TO OPERATION BY ANY NEW OWNER, OR A DELINQUENT FEE WILL BE CHARGED.

THIS FORM MUST BE RETURNED WITH YOUR REMITTANCE

SAN BERNARDINO COUNTY

ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

COUNTY OF SAN BERNARDINO, CALIFORNIA

GENERAL DYNAMICS
2824 N LOCUST
RIALTO, CA 92376
EST - 91023726 PERMIT - 9104170003

THIS PERMIT EXPIRES:
03/31/92

PERMIT

NON-TRANSFERABLE

This permit may be suspended or revoked by the health officer for cause. This permit is granted on condition that the person named in the permit will comply with the laws, ordinances and regulations that are now or may hereafter be in force by the United States Government, the State of California and the County of San Bernardino pertaining to the above mentioned business. Penalty fees are assessed on permits renewed 30 days after expiration date indicated above, or for failure to obtain new permit in case of transfer of ownership.

TYPE OF PERMIT - HAZARDOUS MATERIAL HANDLER, 0-10 EMPLOYEES

FEE PAID $140.00

MILLER, DON
DBA: GENERAL DYNAMICS
P O BOX 50800
ONTARIO, CA 91761-1085

04-1804-631 REV. 3/85

PERMIT DOES NOT IMPLY APPROVAL

POST IN A CONSPICUOUS PLACE

Director
ENVIRONMENTAL HEALTH SERVICES

SBCHMD

0029333

EH401B

General Dynamics

COUNTY OF SAN BERNARDINO
EHS PERMIT SYSTEM

DATE 04/17/91
PAGE: 2

INSERT AUDIT TRAIL

*** CONTROL NUMBER: 9000101 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: 9104170003 ***

PERMIT NBR	CATEGORY	STATUS	EXPIR DATE	MFR NUMBER	SANITARIAN AREA	DISTRICT EMPLOYEE	EXEMPT FLAG	DELQ FLAG	PRT FLG	BALANCE DUE	BILLED DATE	RENEWAL DATE	RENEWAL AREA CODE	NBR SVCS
9104170003	226009		03/31/92		05	00				0.00	00/00/00	00/00/00	T	

*** CONTROL NUMBER: 9000101 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: 9104170003 ***

PROGRAM DATA:	NUMBER SEATS	SQUARE FEET	NUMBER GALLONS	SOFT SERVE	DAILY TONS	DAILY CU YDS	NUMBER EMPLOYEES	NUMBER TANKS	NUMBER MACHINES	NUMBER UNITS	NUMBER POOLS	NUMBER BIRDS	NUMBER CONNECTIONS
							00001	000					

APR 19 1991

101
200 > $140.00

OP. APR 19 1991

RE

MI

SBCHMD 00 29 34

MONTHLY

COUNTY OF SAN BERNARDINO, CALIFORNIA
DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES
INVOICE

PAGE 1
BILL DATE 02/26/91 Transfer
HEALTH PERMIT EXPIRATION DATE 03/31/91

*** REMIT COPY ***

9000 1

ESTABLISHMENT NBR 91023726

~~SAYLOR, EVA~~ MILLER, DON
DBA: GENERAL DYNAMICS
P O BOX 50800
ONTARIO, CA 91761-1085

GENERAL DYNAMICS
2824 N LOCUST
RIALTO, CA 92376

PERMIT NBR	CATEGORY	DESCRIPTION	BILL CODE	AMOUNT
		PREVIOUS BALANCE		0.00
91 50145	226009	HAZARDOUS MATERIAL HANDLER, 0-10 EMPLOYEES	101	140.00
		PERMIT TOTAL		140.00
		TOTAL DUE		140.00

ALL FEES ARE NOW DUE AND PAYABLE. FAILURE TO PAY WITHIN 30 DAYS AFTER THE EXPIRATION DATE OF YOUR CURRENT PERMIT WILL RESULT IN THE ASSESSMENT OF A DELINQUENT FEE. DO NOT SEPARATE THESE FORMS. REVIEW, UPDATE, AND SIGN THE ATTACHED RENEWAL APPLICATION(S). RETURN REMIT COPY OF THE INVOICE AND APPLICATION(S) WITH REMITTANCE TO: ENVIRONMENTAL HEALTH SERVICES
385 N. ARROWHEAD AVENUE
SAN BERNARDINO, CA 92415-0160

IF YOU HAVE QUESTIONS CONCERNING YOUR BILLING PLEASE CALL:

FOOD ESTABLISHMENT PERMITS -- 387-4637
SWIMMING POOL PERMITS -- 387-4637
MILK & DAIRY ESTABLISHMENTS -- 387-4608
HAZARDOUS OR INFECTIOUS WASTE GENERATORS -- 387-3080
UNDERGROUND STORAGE TANK PERMITS -- 387-3080
HAZARDOUS MATERIAL HANDLER PERMITS -- 387-3044
MOBILEHOME PARK PERMITS -- 387-6515
MOTEL, CAMP, MASSAGE PARLOR PERMITS -- 387-6515
HOME OCCUPATION PERMITS -- 387-6512
TEMPORARY OFFICES/SIGNS -- 387-6512
REFUSE HAULERS -- 387-4655
REFUSE DISPOSAL SITES -- 387-4655
DESIGNATED MAINTENANCE AREA -- 387-4666
WATER SYSTEMS -- 387-4666
WELL DRILLERS -- 387-4666
SPECIAL USE PERMITS -- 387-6512

PAID
Amt 140.00
Date 4-11-91
By E

THIS FORM MUST BE RETURNED WITH YOUR REMITTANCE

UNUSUAL COLOR

MONTHLY

RENEWAL APPLICATION FOR HEALTH PERMIT INSPECTION AND HEALTH SERVICES

SAN BERNARDINO COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES
385 N. ARROWHEAD AVE., SAN BERNARDINO, CA. 92415-0160

PLEASE REVIEW THE FOLLOWING INFORMATION CAREFULLY. MAKE CORRECTIONS DIRECTLY ON THE FORM BY CROSSING OUT THE PRE-PRINTED INFORMATION AND ADDING THE CHANGES. *** PLEASE PRINT. ***

ESTABLISHMENT INFO GENERAL DYNAMICS
2824 N LOCUST
RIALTO, CA 92376

<✓> CHECK HERE IF APPLICANT IS SAME AS LEGAL OWNER

APPLICANT INFO ~~SAYLOR, EVA~~ MILLER, DON
(714) 945-8680 P O BOX 50800
ONTARIO, CA 91761-1085

LEGAL OWNER INFO ~~SAYLOR, EVA~~ MILLER, DON
(714) 945-8680 P O BOX 50800
ONTARIO, CA 91761-1085

IS THIS A TRANSFER? YES

IF YES: FORMER ESTABLISHMENT NAME SAME

FORMER OWNER SAYLOR, EVA

IMPORTANT: ALL CORRESPONDENCE SHOULD BE SENT TO: ___ESTABLISHMENT ADDRESS ✓ LEGAL OWNER ___APPLICANT

NUMBER OF EMPLOYEES: 1

OFFICE USE ONLY 10
EST NBR 91023726
PERMIT NBR 9102050145
FORMER EST NBR _____
PERMIT CATEGORY 226009
EXPIR DATE 03/31/91
NEW, TRANS, RENEW N
LOC CODE 63
SANI DIST 2200
MFR NBR
APN
PERMIT FEE _____
STATE FEE _____
DELINQUENT FEE _____
TOTAL FEE REC'D $140

THIS FORM MUST BE RETURNED WITH YOUR REMITTANCE

I HEREBY MAKE APPLICATION FOR HEALTH SERVICES AND PERMIT TO ESTABLISH AND/OR OPERATE THE ABOVE MENTIONED BUSINESS, USE, OR SERVICE IN ACCORDANCE WITH THE LAWS, ORDINANCES, AND REGULATIONS THAT ARE NOW OR MAY HEREINAFTER BE IN FORCE BY THE UNITED STATES GOVERNMENT, THE STATE OF CALIFORNIA, AND THE COUNTY OF SAN BERNARDINO PERTAINING TO THE ABOVE MENTIONED BUSINESS. I HEREBY CONSENT TO ALL NECESSARY INSPECTIONS INCIDENT TO THE ISSUANCE OF THIS PERMIT AND THE OPERATION OF THE BUSINESS.

SIGNED Adam VonSaylow DATED 4/10/91 TITLE Environmental Eng. Asst.

NOTICE: ALL FEES ARE DUE AND PAYABLE WITHIN 30 DAYS. FAILURE TO PAY WILL RESULT IN THE ASSESSMENT OF A DELINQUENT FEE. APPLICATION AND FEE MUST BE SUBMITTED PRIOR TO OPERATION BY ANY NEW OWNER, OR A DELINQUENT FEE WILL BE CHARGED.

SBCHMD 00202 0

SBCHMD

ENVIRONMENTAL
HEALTH SERVICES
91 APR 11 PM 3:12

HAZARDOUS MATERIAL FIELD SERVICES
AUTOMATED PERMIT BILLING SYSTEM
DATA INPUT SHEET

ACTION CODE: I EST. # _____ PERMIT # _____

ESTABLISHMENT INFO: (00)

BILL TO: A LOCATION: # 63/0500 TODAY'S DATE: 1/17/91

ADDRESSING INFORMATION (99):

E

NAME: General Dynamics

ST #: 2824 FRAC: ____ DIR: N ST NAME: Locust

ST. DESIG. _____ APT/SP _____ CITY Rialto

STATE CA ZIP 92376 PH #: ( ) _____ - _____

A

NAME: Eva Saylor - 602-66

ST #: P.O. BOX 50800 FRAC: ____ DIR: ____ ST NAME: _____

ST. DESIG. _____ APT/SP _____ CITY Ontario

STATE CA ZIP 91761-1085 PH #: (714) 945 - 8680

O

NAME: _____

ST #: _____ FRAC: ____ DIR: ____ ST NAME: _____

ST. DESIG. _____ APT/SP _____ CITY _____

STATE _____ ZIP _____ PH #: ( ) _____ - _____

PERMIT INFORMATION (01):

CATEGORY # 226009 _____ EXP. DATE: _____

_____ _____ RENEWAL CODE: N

PROGRAM INFORMATION:

OF EMPLOYEES: 1 # OF TANKS: Ø

DATE ENTERED: 2.6.91 CONTROL #: 70078

SUBMITTED BY (INITIAL): mk R ENTERED BY (INITIAL) KB

COMMENTS/REMARKS:

SBCHMD 002938

INSERT AUDIT TRAIL

*** CONTROL NUMBER: 7007800 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: 0000000000 ***

ESTAB NBR: 91023726 BILL FLAG: A LOC: 63 PARCEL NBR: PROBLEM PGM: STATUS: ESTAB DATE: 020691 INACTIVE DATE: 000000

*** CONTROL NUMBER: 7007801 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: 9102050145 ***

PERMIT NBR	CATEGORY	STATUS	EXPIR DATE	MFR NUMBER	SANITARIAN AREA	DISTRICT EMPLOYEE	EXEMPT FLAG	DELQ FLAG	PRT FLG	BALANCE DUE	BILLED DATE	RENEWAL DATE	RENEWAL CODE	AREA	NBR SVCS
9102050145	226009		03/31/91		22	00				0.00	00/00/00	00/00/00	N		

*** CONTROL NUMBER: 7007801 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: 9102050145 ***

PROGRAM DATA:	NUMBER SEATS	SQUARE FEET	NUMBER GALLONS	SOFT SERVE	DAILY TONS	DAILY CU YDS	NUMBER EMPLOYEES	NUMBER TANKS	NUMBER MACHINES	NUMBER UNITS	NUMBER POOLS	NUMBER BIRDS	NUMBER CONNECTIONS
							00001	000					

*** CONTROL NUMBER: 7007899 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: A ***

*** CONTROL NUMBER: 7007899 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: E ***

*** CONTROL NUMBER: 7007899 ESTABLISHMENT NUMBER: 91023726 PERMIT NUMBER: O ***

ESTAB: GENERAL DYNAMICS
2824 O/O N LOCUST
00000
RIALTO CA 92376-0000
(000) 000-0000

APPL: SAYLOR, EVA
O/O P O BOX 50800
00000
ONTARIO CA 91761-1085
(714) 945-8680

OWNR: SAYLOR, EVA
O/O P O BOX 50800
00000
ONTARIO CA 91761-1085
(714) 945-8680

SBCHM DOCUMENT

SBCHMD 00[illegible]

bus. card + permits

County of San Bernardino
DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES

(602-66) — area zone

HAZARDOUS WASTE GENERATOR INSPECTION REPORT

Attn:

Facility Name: General Dynamics
Contact Person: Eva Saylor
Situs Address: 2824 N. Locust, Rialto
Phone Number: (714) 945-8680
Mailing Address: Air Defense Sys. Div, P.O. Box 50800, Ontario, CA 91761-1085
Number Employees:
Others Present:
EPA Number:

			The following violations have been noted and must be corrected as follows:
MATERIALS/WASTE MANAGEMENT	Stored Over 90 Days	1	General Dynamics rents space at 2824 N. Locust to store hazardous materials.
	Fenced/Bermed	2	
	Drums Labeled	3	
	Labels Dated	4	
	Containers Sound	5	
	Containers Closed	6	
	Managed to Prevent Leaks	7	
	Incompatibles — Mixed	8	
	Incompatibles — Stored	9	(26) Obtain county "hazardous material handler" permits.
	Comingling	10	
	Packaged/Placards	11	
	50' from Property Line	12	
	Warning Signs	13	(30) Submit a Business Plan to this dept within 30 days
	Inventory Verification	14	
DISPOSAL	Manifested	15	
	Illegal Disposal	16	
	Discharged to Ground	17	
	Contaminated Soil	18	
	Empty Drums	19	
	Licensed Hauler	20	
	Class I Site	21	
	Waste Minimization	22	
RECORDS	Inadequate Records	23	
	Manifests Available	24	
	Business Plan/MSDS	25	
	Permit Generator/Handler	(26)	
PERSONNEL	Training	27	
	Safety/Emergency Equipment	28	
	Contact Persons	29	
	Business Plan Knowledge	(30)	
TANKS	Leaking	31	
	Monitored	32	
	Comingling	33	
	Permit — Tanks	34	
ACTION	Notice of Violation	35	
	Samples Taken	36	
	cc: DCHS	37	
	RWQCB	38	
	AQMD	39	

Additional Comments:

Inspector: Maria Keffer
Received By:
Date: 1/17/91

HAZARDOUS MATERIALS FIELD SERVICES — 385 North Arrowhead Avenue, San Bernardino, CA 92415-0160 — (714) 387-3080

15-17137-631

GENERAL DYNAMICS

Pomona Division

Inter-Office Memo
M6-501-89-021
1 May 1989

To: D. Gilson, D. Harbin, K. Waszak

cc: A. Anspach, D. Coburn, S. Klingensmith, D. Miller

From: Engineering Support Services, 6-501

Subject: Annual Explosive Material Storage/Compatability Data

Enclosure: a) Explosive Compatability/Net Weight Report

The following is the Explosive Material Storage/Compatability data for April 1989. Enclosure (a) provides information regarding the compatability and net explosive weight for each explosive storage magazine located at Broco, Inc., Rialto.

The information listed below represents the actual amount of storage space currently utilized by GD/P and VSD to store explosive material. This does not include air/aisle space within each magazine.

Div./Prog.	Active Files/Records	Inactive Files/Records	Storage Space (Cubic Feet)
PD	51 ea.		130
PD		4 ea.	20
VSD	18 ea.		90
VSD		15 ea.	60
DIVAD		17 ea.	1088

Total - 1388 Cubic Feet

Eva E. Saylor
Explosive Coordinator

EES/drc
Enclosure

GENERAL DYNAMICS
Pomona Division

Inter-Office Memo
M6-501-88-021
26 May 1988

To: D. Gilson, R. Grant, D. Harbin, K. Wazak

cc: A. Anspach, D. Coburn, S. Klingensmith, D. Miller

From: Engineering Support Services, 6-501

Subject: Bi-Annual Explosive Material Storage/Compatability Data

Enclosure: a) Explosive Compatability/Net Weight Report

The following is the Explosive Material Storage/Compatability data for May 1988. Enclosure (a) provides information regarding the compatability and net explosive weight for each explosive storage magazine located at Broco, Inc., Rialto.

The information listed below represents the actual amount of storage space currently utilized by GD/P and VSD to store explosive material. This does not include air/aisle space within each magazine.

Div./Prog.	Active Files/Records	Inactive Files/Records	Storage Space (Cubic Feet)
PD	50 ea.		124
PD		15 ea.	62
VSD	19 ea.		67
DIVAD		17 ea.	1088
			Total - 1341 Cubic Feet

Eva E. Saylor
Explosive Coordinator

EES/lfp
Enclosure

GENERAL DYNAMICS EXPLOSIVE STORAGE SITE
RIALTO, CALIFORNIA

Computed on 12 May 1988, by Eva E. Saylor

GD-1		GD-2		GD-3		GD-4		GD-5		GD-6	
PD	VSD	PD	VSD	PD	VSD	PD	VSD	PD	VSD	PD	VSD
		0012	0071	0085	0231	0089	0010	0108		0171	0172
		0026	0074	0086	0306	0110	0016	0109		0244	0242
		0155	0167	0156		0133	0020	0112			
		0176	0185-1	0241		0137	0023	0134			
		0177	0259	0243		0142	0025	0135			
		0178		0153		0220	0041-1	0136			
		0186		0154		0246	0042	0143			
		0187				0247	0131	0248			
		0189				0251	0160	0249			
		0190				0274-2	0163	0250			
		0233				0303	0165	0293			
		0235				N/F-CAP		0201			
		0236						0302			
		0238									
		0239									
		0270									

FILES FOR DISPOSITION

0092-RA-NAVPRO	N/F BAtt-PD	0106-NAVPRO	0060 - PD		
0093-RA-NAVPRO					
0094 NAVPRO					
0095-RA-NAVPRO					
0096 NAVPRO					
0097-RA-NAVPRO					
0098 NAVPRO					
0099-RA-NAVPRO					
0100-RA-NAVPRO					
0101-RA-NAVPRO					
0102-RA-NAVPRO					
0107-RA-NAVPRO					

DIVAD AMMUNITION

0103				0083	0113
				0084	0114
				0087	0115
				0088	0116
				0245	0117
					0118
					0119
					0120
					0121
					0122
					0123

MAGAZINE NUMBER DESIGNATION GD-2 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0012	GD/P	Squib	S	1.4	C	5	.00001
0026	GD/P	Piston Actuator	S	1.4	C	6	.000264
0071	VSD	Match	S	1.4	C	23	.00253
0074	VSD	Match	S	1.4	C	21	.00231
0155	GD/P	Squib	S	1.3	C	2	.00044
0167	VSD	Squib, Wing Release	S	1.4	C	18	.0080172
0176	GD/P	Toy Rocket Motor	S	1.4	B	15	4.6875
0177	GD/P	Toy Rocket Motor	S	1.4	C	10	3.125
0178	GD/P	Toy Rocket Motor	S	1.4	C	10	2.5
0185	VSD	ATWESS Cartridge	G	1.3	C	70	.29
0186	GD/P	Detonator	S	1.4	C	5	.012125
0187	GD/P	Detonator	S	1.4	C	8	.0084864
0189	GD/P	Detonator	S	1.4	C	5	.0022270
0190	GD/P	Actuator	S	1.4	C	11	.0048994
0233	GD/P	Detonator	S	1.4	C	3	.072765
0235	GD/P	Squib, Initiator	S	1.4	C	3	.0031224
0236	GD/P	Detonator	S	1.4	C	3	.00006
0238	GD/P	Actuator	S	1.4	C	3	.00006
0239	GD/P	Detonator	S	1.4	C	2	.000012
0259	VSD	Smoke Pot	G	1.3	C	10	250
0270	GD/P	Primer	G	1.4	C	90	.0018
N/File	GD/P	Battery	S	1.4	C	3	.0000012

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 260.7216296

DATE

MAGAZINE NUMBER DESIGNATION GD-1 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0092*	GD/P	Cartridge (RA) 20mm	C	1.4	C	230	18.4
0093*	GD/P	Cartridge (RA) 20mm	C	1.4	C	102	8.16
0094*	GD/P	Cartridge 20mm	C	1.4	C	166	13.28
0095*	GD/P	Cartridge (RA) 20mm	C	1.4	C	208	16.64
0096*	GD/P	Cartridge 20mm	C	1.4	C	491	39.28
0097*	GD/P	Cartridge (RA) 20mm	C	1.4	C	135	10.8
0098*	GD/P	Cartridge 20mm	C	1.4	C	1149	91.92
0099*	GD/P	Cartridge (RA) 20mm	C	1.4	C	557	44.56
0100*	GD/P	Cartridge (RA) 20mm	C	1.4	C	584	46.72
0101*	GD/P	Cartridge (RA) 20mm	C	1.4	C	99	8.44
0102*	GD/P	Cartridge (RA) 20mm	C	1.4	C	93	7.44
0103	GD/P	Cartridge 35mm	C	1.2	A	60	59.14
0107*	GD/P	Cartridge (RA) 30mm	C	1.4	B	7	.01001
		*Note					
		Material listed with an *					
		have schedule B forms assigned to them.					

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 364.79001

DATE _____

MAGAZINE NUMBER DESIGNATION GD-3 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0085	GD/P	Cartridge 30mm	C	1.3	B	250	84.89247
0086	GD/P	Cartridge 30mm	C	1.3	B	970	385.95
0106*	GD/P	Cartridge 30mm	C	1.3	B	31	.75361
0153	GD/P	Cartridge 30mm	C	1.3	B	24	8.2026
0154	GD/P	Cartridge 30mm	C	1.3	B	66	22.55715
0156	GD/P	Initiator	C	1.4	C	4	.012
0231	VSD	Launch Motor	C	1.3	B	1	1.5
0241	GD/P	Cartridge 30mm	C	1.3	B	86	28.8223
0243	GD/P	Cartridge 30mm	C	1.3	B	250	85.4425
0306	VSD	Launch Motor	C	1.3	B	10	5.625
		* Material is on Schedule "B"					

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 623.75763

DATE _____ PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-4 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0010	VSD	Actuators, PIston	S	1.4	C	86	.0000172
0016	VSD	Actuator, Linear	S	1.4	C	3	.000132
0020	VSD	Shock Impulse Generator	S	1.4	C	23	.0000092
0023	VSD	Pressure Cartridge	S	1.4	C	18	.01584
0025	VSD	Squib	S	1.4	C	120	.1056
0041-1	VSD	Actuator, Piston	S	1.4	C	44	.00178
0042	VSD	Actuator	S	1.4	C	33	.014
0060							
0089	GD/P	Primed Cases Only 20mm	B	1.4	C	50	.00001
0110	GD/P	Detonators (EBC)	B	1.3	C	8	.009152
0131	VSD	Actuator, Piston	S	1.4	C	260	.026668
0133	GD/P	Squib, Electric	S	1.4	C	14	.008008
0137	GD/P	Match & Caps	B	1.2	A	22	.028314
0142	GD/P	Detonator (EBC)	B	1.1	A	40	.026320
0160	VSD	Squib	S	1.4	C	9	.010296
0163	VSD	Fuze	S	1.4	C	2	.03916
0165	VSD	Battery, Thermal	S	1.4	C	4	.000002
0220	GD/P	Detonator, Non Elec. Fuz Cap	B	1.1	A	26	.022308
0246	GD/P	Match, Electric	S	1.4	C	10	.00858
0247	GD/P	Squib	S	1.4	C	3	.00429
0251	GD/P	Squib	S	1.4	C	3	.00429
0274	GD/P	Detonator, (EBC)	B	1.1	C	121	.103818
0303	GD/P	Detonator	B	1.1	C/A	50	.0009
N/FILE	GD/P	Dummy Detonator	-	-	-	-	-

TOTAL NET EXPLOSIVE WEIGHT

DATE _____ PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-5 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0083	GD/P	Fuze, Time	C	1.2	A	60	.002646
0084	GD/P	Fuze, Prox.	C	1.2	A	40	.001764
0087	GD/P	Fuze, Time	C	1.2	A	265	.011686
0088	GD/P	Fuze	C	1.2	A	463	.510457
0108	GD/P	Powder	S	1.4	C	12 oz.	.75
0109	GD/P	Powder	S	1.4	C	16 oz.	1
0112	GD/P	Powder	S	1.4	C	12 oz.	.75
0134	GD/P	Detonating Fuze (12 gr)	S	1.4	C	16 ft.	.027456
0135	GD/P	Detonating Fuze (8 gr)	S	1.4	C	19 ft	.021736
0136	GD/P	Detonating Fuze (4 gr)	S	1.4	C	19 ft.	.010868
0143	GD/P	Primer Harness Assy.	S	1.2	C	160	.09152
0245	GD/P	Fuze	C	1.2	A	170	.007497
0248	GD/P	Powder	S	1.4	C	12 oz.	.75
0249	GD/P	Detonating Cord (50 gr)	D	1.1	C	1200 ft.	8.58
0250	GD/P	Powder	S	1.4	C	12 oz.	.75
0293	GD/P	Propellant	C	1.1	A	.29 lbs	.29
0301	GD/P	Deta Sheet C-1	D	1.1	A	.25	.25
0302	GD/P	Deta Sheet C-2	D	1.1	A	.25	.25

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 14.05563

DATE _____ PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-6 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM		DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0113	DIVAD	Cartridge	35mm	E	1.2	A	206	203.528
0114	DIVAD	Cartridge	35mm	E	1.2	A	147	145.236
0115	DIVAD	Cartridge	35mm	E	1.2	A	30	29.58
0116	DIVAD	Cartridge	35mm	E	1.2	A	22	21.692
0177	DIVAD	Cartridge	35mm	E	1.2	A	4	3.872
0118	DIVAD	Cartridge	35mm	C	1.3	B	2054	1540.5
0119	DIVAD	Cartridge	35mm	C	1.3	B	1905	1417.1
0120	DIVAD	Cartridge	35mm	C	1.3	B	71	52.611
0121	DIVAD	Cartridge	35mm	C	1.3	B	10	7.41
0122	DIVAD	Cartridge	35mm	C	1.3	B	75	54.6
0123	DIVAD	Cartridge	35mm	E	1.2	A	100	78.
0171	GD/P	Cartridge	30mm	C	1.3	B	52	73.3199
0172	VSD	Ammunition	20mm	C	1.3	C	1000	90.
0242	VSD	Ammunition	50CAL	E	1.2	C	190	5.9189
0244	GD/P	Cartridge	30mm	C	1.3	B	55	18.92

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE [illegible]

GENERAL DYNAMICS EXPLOSIVE STORAGE SITE
RIALTO, CALIFORNIA

COMPUTED ON 5/1/89 by Eva E. Saylor

GD-1		GD-2		GD-3		GD-4		GD-5		GD-6	
PD	VSD	PD	VSD	PD	VSD	PD	VSD	PD	VSD	PD	VSD
0092		N/F	0071	0085		0110	0010	0108		0171	0172
0093		0012	0074	0086		0133	0016	0109		0244	0242
0094		0026	0167	0106		0137	0020	0112			
0095		0176	0212/2	0153		0142	0023	0134			
0096		0177	0264	0154		0220	0025/1	0135			
0097		0178		0241		0246	0042	0136			
0098		0270		0243		0247	0131	0146			
0099						0251	0160	0248			
0100						0274/2	0183	0249			
0101						0303	0311	0250			
0102						0319	0342	0301			
						0320		0302			

DIVAD AMMUNITION

0103				0083	0113
				0084	0114
				0087	0115
				0088	0116
				0245	0117
					0118
					0119
					0120
					0121
					0122
					0123

FILES FOR DISPOSITION

ENGINEERING POMONA	PRODUCTION POMONA	PRODUCTION VALLEY SYSTEMS
Magazine GD-1 File #0103	Magazine C2-A File #1001	Magazine C2-A File Numbers:
Magazine GD-3 File #0106	#1002	1005 1013
		1006 1014
		1007 1015
		1008 1016
		1009 1017
		1010 1018
		1011 1019
		1012

DATE:

MAGAZINE NO. DESIGNATION: GD-1

MAGAZINE LOCATION: GENERAL DYNAMICS EXPLOSIVE STORAG
2824 N. LOCUST AVE. RIALTO, CA 92

SUBMITTED BY: E. E. SAYLOR

FILE NO.	DU PROJ. WEIGHT	DESCRIPTION OF ITEM	MR CLSD	MR OPEN	CONTRACT NO.	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW IN LI
0092	92 grams	Cartridge (RA) 20mm	.6	1.25	N00024-88-C-5450	C	1.4	C	230	18.4 lbs.
0093	92 grams	Cartridge (RA) 20mm	.2	1.3	N00024-88-C-5450	C	1.4	C	102	8.16 lbs
0094	NONE	Cartridge 20mm	N/A	N/A	N00024-88-C-5450	C	1.4	C	166	13.28 lbs
0095	92 grams	Cartridge (RA) 20mm	.5	5.0	N00024-88-C-5450	C	1.4	C	208	16.64 lbs
0096	NONE	Cartridge 20mm	N/A	N/A	N00024-88-C-5450	C	1.4	C	491	39.28 lbs
0097	92 grams	Cartridge (RA) 20mm	.5	5.0	N00024-88-C-5450	C	1.4	C	135	10.8 lbs.
0098	NONE	Cartridge 20mm	N/A	N/A	N00024-88-C-5450	C	1.4	C	1149	91.92 lbs
0099	92 grams	Cartridge (RA) 20mm	.4	.7	N00024-88-C-5450	C	1.4	C	557	44.56 lbs
0100	92 grams	Cartridge (RA) 20mm	.5	5.0	N00024-88-C-5450	C	1.4	C	584	46.72 lbs
0101	92 grams	Cartridge (RA) 20mm	.5	5.0	N00024-88-C-5450	C	1.4	C	99	8.44 lbs
0102	92 grams	Cartridge (RA) 20mm	.5	5.0	N00024-88-C-5450	C	1.4	C	93	7.44 lbs
0103	NONE	Cartridge 35mm	N/A	N/A	AWO-1901	C	1.2	A	60	59.14 lbs
0107	350 grams	Cartridge (RA) 30mm	.7	5.0	N00024-80-C-7006	C	1.4	B	7 ea. (4 ea. Sabots)	.01

PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-1 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0092	GD/P	Cartridge (RA) 20mm	C	1.4	C	230	16.4
0093	GD/P	Cartridge (RA) 20mm	C	1.4	C	102	8.16
0094	GD/P	Cartridge 20mm	C	1.4	C	166	13.28
0095	GD/P	Cartridge (RA) 20mm	C	1.4	C	208	16.64
0096	GD/P	Cartridge 20mm	C	1.4	C	491	39.28
0097	GD/P	Cartridge (RA) 20mm	C	1.4	C	135	10.8
0098	GD/P	Cartridge 20mm	C	1.4	C	1149	91.92
0099	GD/P	Cartridge (RA) 20mm	C	1.4	C	557	44.56
0100	GD/P	Cartridge (RA) 20mm	C	1.4	C	584	46.72
0101	GD/P	Cartridge (RA) 20mm	C	1.4	C	99	8.44
0102	GD/P	Cartridge (RA) 20mm	C	1.4	C	93	7.44
0103	GD/P	Cartridge 35mm	C	1.2	A	60	59.14
0107	GD/P	Cartridge (RA) 30mm	C	1.4	B	7	.01001
		*NOTE					
		Material listed with an *					
		have schedule B forms assigned to them.					

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 364.79001

DATE 9/1/89 PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-2 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0012	GD/P	Squib	S	1.4	C	5	.00001
0026	GD/P	Piston Actuator	S	1.4	C	6	.000264
0071	VSD	Match	S	1.4	C	23	.00231
0074	VSD	Match	S	1.4	C	21	.00231
0167	VSD	Squib, Wing Release	S	1.4	C	18	.0080172
0176	GD/P	Toy Rocket Motor	S	1.4	B	15	4.6875
0177	GD/P	Toy Rocket Motor	S	1.4	C	10	3.125
0178	GD/P	Toy Rocket Motor	S	1.4	C	10	2.5
0259	VSD	Smoke Pot	G	1.3	C	10	250
0270	GD/P	Primer	G	1.4	C	90	.0018

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 260.68721

MAGAZINE NUMBER DESIGNATION GD-3 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0085	GD/P	Cartridge 30mm	C	1.3	B	250	84.89247
0086	GD/P	Cartridge 30mm	C	1.3	B	970	385.95
0108*	GD/P	Cartridge 30mm	C	1.3	B	31	.75361
0153	GD/P	Cartridge 30mm	C	1.3	B	34	8.2026
0154 1	GD/P	Cartridge 30mm	C	1.3	B	66	22.55715
0241	GD/P	Cartridge 30mm	C	1.3	B	86	28.8223
0243	GD/P	Cartridge 30mm	C	1.3	B	250	85.4425
		*Material is is Schedule 'B'					

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 615.62063

DATE 5/1/89 PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-4 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0010	VSD	Actuators, Piston	S	1.4	C	86	.0000172
0016	VSD	Actuator, Linear	S	1.4	C	3	.000132
0020	VSD	Shock Impulse Generator	S	1.4	C	23	.0000092
0023	VSD	Pressure Cartridge	S	1.4	C	18	.01584
0025/1	VSD	Squib	S	1.4	C	116	.1056
0042	VSD	Actuator	S	1.4	C	33	.014
0110	GD/P	Detonators (EBC)	B	1.3	C	8	.009152
0131	VSD	Actuator, Piston	S	1.4	C	260	.026668
0133	GD/P	Squib, Electric	S	1.4	C	14	.008008
0137	GD/P	Match & Caps	B	1.2	A	22	.028314
0142	GD/P	Detonator (EBC)	B	1.1	A	33	.026320
0160	VSD	Squib	S	1.4	C	9	.010296
0183	VSD	Dispenser Assy	S	1.4	C	5pc	.0003
0220	GD/P	Detonator, Non Elec. Fuz Cap	B	1.1	A	26	.022308
0246	GD/P	Match, Electric	S	1.4	C	10	.00858
0247	GD/P	Squib	S	1.4	C	3	.00429
0251	GD/P	Squib	S	1.4	C	3	.00429
0274/2	GD/P	Detonator, (EBC)	B	1.1	C	121	.103818
0303	GD/P	Detonator	B	1.1	C/A	27	.0009
N/FILE	GD/P	Dummy Detonator	-	-	-	-	-
0311	VSD	Squib	S	1.4	C	33	.003
0319	GD/P	FLSC For F-14	S	1.4	C	190pc	1.005
0320	GD/P	Detonator, (EBC)	B	1.1	C/A	200	2
0342	VSD	Fuze	B	1.4	C	1	.0002

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 3.3970424

DATE 3/1/87 PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-5 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0083	GD/P	Fuze, Time	C	1.2	A	60	.002646
0084	GD/P	Fuze, Prox.	C	1.2	A	40	.001764
0087	GD/P	Fuze, Time	C	1.2	A	265	.011686
0088	GD/P	Fuze	C	1.2	A	463	.510457
0108	GD/P	Powder	S	1.4	C	12 oz.	.75
0109	GD/P	Powder	S	1.4	C	16 oz.	1
0112	GD/P	Powder	S	1.4	C	12 oz.	.75
0134	GD/P	Detonating Fuze (12 gr)	S	1.4	C	22'4"	.027456
0135	GD/P	Detonating Fuze (8 gr)	S	1.4	C	19'9:	.021736
0136	GD/P	Detonating Fuze (4 gr)	S	1.4	C	6'10"	.010868
0143	GD/P	Primer Harness Assy.	S	1.2	C	160	.09152
0245	GD/P	Fuze	C	1.2	A	170	.007497
0248	GD/P	Powder	S	1.4	C	12 oz.	.75
0249	GD/P	Detonating Cord (50 gr)	D	1.1	C	1200 ft.	8.58
0250	GD/P	Powder	S	1.4	C	12 oz.	.75
0301	GD/P	Deta Sheet C-1	D	1.1	A	.15	.15
0302	GD/P	Deta Sheet C-2	D	1.1	A	.25	.25

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 12.99063

DATE 5/1/89 PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION GD-6 MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM		DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
0113	DIVAD	Cartridge	35mm	E	1.2	A	206	203.528
0114	DIVAD	Cartridge	35mm	E	1.2	A	147	145.236
0115	DIVAD	Cartridge	35mm	E	1.2	A	30	29.58
0116	DIVAD	Cartridge	35mm	E	1.2	A	22	21.692
0177	DIVAD	Cartridge	35mm	E	1.2	A	4	3.872
0118	DIVAD	Cartridge	35mm	C	1.3	B	2054	1540.5
0119	DIVAD	Cartridge	35mm	C	1.3	B	1905	1417.1
0120	DIVAD	Cartridge	35mm	C	1.3	B	71	52.611
0121	DIVAD	Cartridge	35mm	C	1.3	B	10	7.41
0122	DIVAD	Cartridge	35mm	C	1.3	B	75	54.6
0123	DIVAD	Cartridge	35mm	E	1.2	A	100	78.
0171	GD/P	Cartridge	30mm	C	1.3	B	52	73.3199
0172	VSD	Ammunition	20mm	C	1.3	C	1000	90.
0242	VSD	Ammunition	50CAL	E	1.2	C	190	5.9189
0244	GD/P	Cartridge	30mm	C	1.3	B	55	18.92

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE 3742.2878

DATE 3/1/87

PAGE ____ OF ____

MAGAZINE NUMBER DESIGNATION C2-A MAGAZINE LOCATION Rialto

FILE NUMBER	OWNING DIVISION	DESCRIPTION OF ITEM	DOD GROUP	DOD CLASS	DOT CLASS	UNITS	TOTAL NEW
1001	GD/P	Cartridge, Safety (Gyro)	S	1.4	C	19	.025
1002	GD/P	Cartridge, Safety (Gyro)	S	1.4	C	11	.014
1005	VSD	Actuator, Gas Cartridge	S	1.4	C	55	.0007
1006	VSD	Actuator, Gas Bottle	S	1.4	C	77	.0010
1007	VSD	Gas Generator, Squib	S	1.4	C	8	.0003
1008	VSD	Gas Generator, Squib	S	1.4	C	8	.0004
1009	VSD	Actuator, Piston	S	1.4	C	1	.00002
1010	VSD	Actuator, Piston	S	1.4	C	89	.0013
1011	VSD	Actuator, Gas Bottle	S	1.4	C	34	.0005
1012	VSD	Actuator, Gas Bottle	S	1.4	C	38	.0006
1013	VSD	Actuator, Gas Bottle	S	1.4	C	1	.00003
1014	VSD	Gas Generator, Squib	S	1.4	C	1	.00004
1015	VSD	Gas Generator, Squib	S	1.4	C	2	.0002
1016	VSD	Actuator, Wing Release	S	1.4	C	11	.00006
1017	VSD	Actuator, Wing Release	S	1.4	C	6	.00004
1018	VSD	Actuator, Wing Release	S	1.4	C	1	.00002
1019	VSD	Actuator, Wing Release	S	1.4	C	1	.00002

TOTAL NET EXPLOSIVE WEIGHT PER MAGAZINE .04423 LBS

OCT 10 1986
SAFETY/ENGINEER'S
COMP. INS. SECT.

CRANE UNIDYNAMICS
A SUBSIDIARY OF CRANE CO

UNIDYNAMICS/PHOENIX • P.O. BOX 2990 • PHOENIX, ARIZONA 85062-2990

MATERIAL SAFETY DATA SHEET

Date Prepared: 10-8-86 Prepared By: Vic Smallwood UPI MSDS No. 017

NOTE: FOR DETAILED INSTRUCTIONS REGARDING HANDLING, USE AND DISPOSAL OF EXPLOSIVES REFER TO THE DEPARTMENT OF DEFENSE CONTRACTORS SAFETY MANUAL FOR AMMUNITION, EXPLOSIVES AND RELATED DANGEROUS MATERIAL, DOD4145.26M, AND OTHER DATA SOURCES LISTED THEREIN.

SECTION I - PRODUCT IDENTITY

Explosive Component: Initiators

Component Drawing No. 51-3438

SECTION II - HAZARDOUS INGREDIENTS/CHEMICAL IDENTITY

Contains complex explosive mixture.

NOTE: This component is sealed preventing respiratory, ingestion and skin exposure.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Explosive mixtures are sensitive to sudden shock, pressure or high temperature. Subjecting the unit to any one or combination of these could cause an instantaneous release of pressure, gas, heat and fragmentation of the component.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Extinguishing media: Do not attempt to fight fire.

Fire and explosion hazard: May ignite and burn rapidly or detonate if subjected to flames or excessive heat.

NOTE: Check component/engineering drawings and design specifications regarding auto ignition temperature.

FILE #0158

UPI
MSDS No. 017

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to avoid: Flames - excessive heat.

Hazardous Decomposition: Toxic gaseous combustion byproducts will result from component functioning.

SECTION VI - HEALTH HAZARD DATA

This component is sealed preventing respiratory, ingestion and skin exposure. If injury occurs due to accidental ignition or detonation, treat symptomatically.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Avoid sudden shock, high temperature or pressure. Protect component from static charge buildup. Handling and use of this component should be limited to personnel who are authorized and trained in the handling of explosives, including required safety paraphenalia. Use respiratory protection against toxic gaseous combustion byproducts.

Waste disposal method: This explosive component must be ignited, burned or detonated by approved methods in accordance with federal, state and local regulations.

This supercedes UPI MSDS No. N/A

Date Mailed: 10-8-86

Mailed To:

COMPANY NAME: General Dynamics

ADDRESS: c/o Broco Inc.
2610 North Alder
Rialto, CA 92376

ATTN: Safety Office

Distribution: Original to UPI Safety Office
Copy to customer

(3)

4/ ea

OF LABOR
lth Administration

Form Approved
OMB No. 44-R1387

DATA SHEET

legulations for Ship Repairing,
CFR 1915, 1916, 1917)

MANUFACT ICI AME	EMERGENCY TELEPHONE NO. 215-666-8666
ADDRESS (N P. O. BC	
N ... OF DEVICE ACTUATOR	TRADE NAME AND SYNONYMS PISTON ACTUATOR 226-00670
FAMILY PYROTECHNIC POWERED DEVICE	FORMULA N/A

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	-	NA	BASE METAL	-	NA
CATALYST	-	NA	ALLOYS	-	NA
VEHICLE	-	NA	METALLIC COATINGS	-	NA
SOLVENTS	-	NA	FILLER METAL PLUS COATING OR CORE FLUX	-	NA
ADDITIVES	-	NA	OTHERS Gas Generating Initiating-		—
OTHERS			Explosive less than 0.015 grams.		

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Pyrotechnic powered device contains a small amount of initiating		NA
explosive - less than 0.015 gram. The piston actuator is initiated		
electrically. Keep stray energy away. Do not dissect the device.		
The piston extends in a fraction of a second.		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	NA	SPECIFIC GRAVITY (H_2O=1)	NA
VAPOR PRESSURE (mm Hg.)	NA	PERCENT, VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____ =1)	NA
SOLUBILITY IN WATER	NA		

APPEARANCE About ¼" diameter x about 3/4" long metal cylinder with 2(two) pins.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	FLAMMABLE LIMITS N/A	Lel	Uel
EXTINGUISHING MEDIA N/A			
SPECIAL FIRE FIGHTING PROCEDURES N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS None - the device is not a fire hazard. It does not contribute to the severity of the fire. Pistons or plugs could be moderate missile hazards.			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: N/A

EFFECTS OF OVEREXPOSURE: Contact with unit at moment of function could result in a puncture wound.

EMERGENCY AND FIRST AID PROCEDURES: First aid for punctures and lacerations.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE	X	Flame, temperatures above 160°F, static energy,
	STABLE		electrical energy, do not hammer or take it apart

INCOMPATABILITY (Materials to avoid): Power sources stray electrical currents, static electricity, heat, flame, hammering.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Rough handling.
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Collect devices and repackage.

WASTE DISPOSAL METHOD: Methods approved for pyrotechnically functioned devices consult contractor/vendor. Comply with CFR parts 270-271.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): None

VENTILATION			
	LOCAL EXHAUST: None	SPECIAL: Use barricade for electrical tests	
	MECHANICAL (General): None	OTHER	

PROTECTIVE GLOVES: Are not required

EYE PROTECTION: Yes - Safety glasses are recommended.

OTHER PROTECTIVE EQUIPMENT:

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Read the data sheet for the piston actuator
Read the attached "Safety of Piston Actuators and Cutters - a general review"

OTHER PRECAUTIONS:

GPO 854-15

Form OSHA-20
Rev. May 72

ICI Americas Inc.

Aerospace Division

SAFETY OF PISTON ACTUATORS AND CUTTERS

A GENERAL REVIEW

1. From the standpoint of design and normal use.

   Piston actuators and cutters are a generic group of devices actuated by explosive substances. They are not explosive devices. They perform work functions such as unlatching, switching, safeing, cutting, arming, releasing, piercing, pulling, accelerating and rotating. Actuation occurs when an electrical pulse is applied to a resistance bridge wire. The heat ignites an ignition material and a small amount of explosive substance which propels the piston forward. The reverse action piston actuators are called retractable actuators because the piston retracts instead of pushes. Piston travel varies from about 1/16" to 3" at high rates. Safe no fire electrical currents are defined for testing and design definition as are "all fire" energies to provide reliable functioning from -65°F (-54°C) to +160°F (71°C). Such a unit is properly mounted and has the piston restrained against a load in the next assembly. Cutter pistons are retained above an anvil. In this condition the unit safely actuates, no fragmentation or missiles result and no loud noise, smoke or flame result.

   Unpack, store and handle piston actuators and cutters with regard for hazard and value. Protect against electrostatic energy arcs between lead wires and shorted leads to case. Do not permit dissection or opening of units by personnel untrained in hazards of explosives. Do not hammer, heat over 165°F, or physically abuse them.

2. From the standpoint of individual units.

   When functioned unconfined (not wrapped and <u>piston</u> <u>not</u> <u>restrained</u>).

   (a) The piston extends within micro or milliseconds and could cause punctures, lacerations or bruises.

   (b) The piston extends, may fly out, and is a missile hazard.

   (c) The assembly fails after the piston extends so that the crimped plug or the welded plug flies out forming a dual missile hazard.

Valley Forge Corporate Center, P. O. Box 819, Valley Forge, PA 19482 Phone (215) 666-8600

(d) The piston extends rapidly but is positively retained in the unit or by a cutter anvil.

Conclude that units should be handled in carrier boxes and be worked with behind barricades (reach-around protective shields) to preclude injuries due to accidentally initiated units when testing or installing them in a next assembly. When testing units electrically do not exceed power level specified. Use calibrated equipment.

3. From the standpoint of safety for shipping and storage.

Units are packed by wrapping them individually or a few together in foil. The foil protects against stray energy, RF energy and electrostatic arc energy. These are packed with cushioning material in cardboard inner containers and in turn packed in fiberboard boxes. Units if initiated are contained by the packing material, no fire occurs and no noise is heard if they function normally or part due to non-restraint of the piston.

Conclude: The devices as packaged do not have a hazard in transportation. When stored in containers as shipped or in carrier type boxes for in-plant transfer, they would be in QD class 1 (per DOD4145.27M). However, they do not present a "high" fire hazard, or increase the hazard of a fire. They have no blast hazard, do not fragment though pistons or headers may fly out and have no toxic hazard. The units are classified "not regulated" for transportation safety by the Bureau of Explosives for purposes of shipping by common carrier per CFR49 and IATA restricted articles regulations.

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
Electric Squib

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name: WINN STAR INC.	Emergency Telephone Number: 618 964 1811
Address (Number, Street, City, State, and ZIP Code): p.o. box 213	Telephone Number for Information: 618 964 1811
Marion, Ill. 62959	Date Prepared: 4-24-87
	Signature of Preparer (optional): Thomas J. Thompson

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)

This electric squib P/N 4408-525B Igniter is a sealed electro explosive unit which contains a mixture of Zirconium Metal Powder, Ferric Oxide, Boron, Potassium-perchlorate and Calcium Chromate. Total weight of all chemical components does not exceed 100 milligrams per unit. The unit can be activated by exposureto heat in excess of 700 degrees F. Also by electrical stimulation between the leads by a current of 2 amperes or more. Safety glasses should be worn when handling these units. Combustion products of activated units is not known to be hazardous but proper ventilation procedures should be followed to exhaust these gases. When activated these units will project flame and hot particales up to a distance of three feet.

Section III — Physical/Chemical Characteristics

Boiling Point: NA		Specific Gravity (H_2O = 1): NA	
Vapor Pressure (mm Hg.): NA		Melting Point: NA	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	

Solubility in Water: NA

Appearance and Odor: NA

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): NA	Flammable Limits: NA	LEL: NA	UEL: NA

Extinguishing Media: XX Carbon Dioxide FOAM Limes Stone

Special Fire Fighting Procedures

Unusual Fire and Explosion Hazards
Extreme Heat Static Electricity

(Reproduce locally)

0071 + 0072 + 0074

OSHA 174, Sept. 1985

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable NA		
	Stable NA		

Incompatibility (*Materials to Avoid*) NA

Hazardous Decomposition or Byproducts None

Hazardous Polymerization			Conditions to Avoid
	May Occur NA		
	Will Not Occur NA		

Section VI — Health Hazard Data

Route(s) of Entry: NA Inhalation? Skin? Ingestion?

Health Hazards (*Acute and Chronic*) NA

Carcinogenicity: NA NTP? NA IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure NA

Medical Conditions Generally Aggravated by Exposure NA

Emergency and First Aid Procedures
If activated and exposed, Regular Burn Procedure apply

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
NA

Waste Disposal Method
MAY BE DISPOSED OF BY ACTIVATED OR BURNING IN APPROPRIATE CONTAINERS

Precautions to Be Taken in Handling and Storing
Store in cool dry environment

Other Precautions

Section VIII — Control Measures

Respiratory Protection (*Specify Type*) NA

Ventilation		
	Local Exhaust NA	Special NA
	Mechanical (*General*) NA	Other NA

Protective Gloves Desired

Eye Protection Safety Shield

Other Protective Clothing or Equipment NA

Work/Hygienic Practices NA

* U.S.G.P.O. 1989—491-529/43775

P.O.: 116171101
P/N: 103377-3

103377-3

QUICK IDENTIFIER (In Plant Common Name)
EX-8502243
CA-850402

Material Safety Data Sheet

Manufacturer's Name	Special Devices, Inc.	Emergency Telephone No.	(805) 259-0753
Address	16830 W. Placerita Cyn. Rd. Newhall, CA 91321	Other Information Calls	(805) 259-6658
Signature of Person Responsible for Preparation	Robert C Gibbs	Date Prepared	25 Nov. '86

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms)	Initiator	Cas No.	
Chemical Name	N/A	Chemical Family	N/A
Formula	N/A		

SECTION 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component(s) (chemical & common name(s))	%	Threshold Limit Value (units)
500488 (Initiating Material) 65 MG.		
Zirconium	< 50	Unknown
Potassium Perchlorate	> 50	Unknown
500485 (Pressure Composition) 110 MG.		
Titanium Hydride	< 30	Unknown
Potassium Perchlorate	> 65	Unknown

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosion Data)

Boiling Point	N/A			Specific Gravity (H_2O=1)	N/A	Vapor Pressure (mm Hg)	N/A
Percent Volatile by Volume (%)	N/A	Vapor Density (Air = 1)	N/A	Evaporation Rate (_____ = 1)	N/A		
Solubility in Water	N/A			Reactivity in Water	N/A		

Appearance and Odor: Stainless steel body with standard MS connector & threaded output end. Hermetically sealed closure. No odor.

Flash Point	N/A	Flammable Limits in Air % by Volume	Lower N/A	Upper N/A	Extinguisher Media	Water, CO_2, Dry Chem	Auto-Ignition Temperature > 600°F

Special Fire Fighting Procedures: Sufficient personal protective equipment to prevent injury from metallic shrapnel.

Unusual Fire and Explosion Hazards: Explosive formulation (See Section 2) may explode or ignite when exposed to fire.

103377-3

SECTION 4 - PHYSICAL HAZARDS

Stability: Unstable ☐ Stable ☒ — Conditions to Avoid: Temperatures in excess of 600°F

Incompatibility (Materials to Avoid): Unknown. Handle carefully.

Keep fire away.

Hazardous Decomposition Products: N/A

Hazardous Polymerization: May Occur ☐ Will Not Occur ☒ — Conditions to Avoid: N/A

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: Unknown

Signs and Symptoms of Exposure — 1. Acute Overexposure: N/A

2. Chronic Overexposure: N/A

Medical Conditions Generally Aggravated by Exposure: Un-contained initiation of this initiator will expel dangerous shrapnel.

Chemical Listed as Carcinogen or Potential Carcinogen: N/A — National Toxicology Program: Yes ☐ No ☒ — I.A.R.C. Monographs: Yes ☐ No ☒ — OSHA: Yes ☐ No ☒

OSHA Permissible Exposure Limit: N/A — ACGIH Threshold Limit Value: N/A — Other Exposure Limit Used: N/A

Emergency and First Aid Procedures: N/A

1. Inhalation: N/A

2. Eyes / 3. Skin: Use personal protective equipment to prevent injury from shrapnel, when unit is un-contained.

4. Ingestion: N/A

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): N/A

Ventilation: Local Exhaust: N/A — Mechanical (General): N/A — Special: N/A — Other: N/A

Protective Gloves: Should be used to the extend possible. — Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: Flame Retardant shop coats & body shielding.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: D.O.D. Hazard Class: 1.4 UN NUMBER: 0206

Storage Compatibility Group: S

Other Precautions: Shipping Name: Electric Squib

Class C Explosive

Steps to be Taken in Case Material is Released or Spilled: Use PPE & Grounding strap to prevent discharge of accumulated electrostatic charges to the unit.

Waste Disposal Methods: Initiate by application of 5 amperes of current to the bridgewire circuit. Unit should be contained to prevent hazards of shrapnel.

IMPORTANT
Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

103377-3

QUICK IDENTIFIER (In Plain Common Name)
EX-8502243
CA-850402

Material Safety Data Sheet

Manufacturer's Name: Special Devices, Inc.
Address: 16830 W. Placerita Cyn. Rd. Newhall, CA 91321
Emergency Telephone No.: (805) 259-0753
Other Information Calls: (805) 259-6658
Signature of Person Responsible for Preparation: Robert C. Gibb
Date Prepared: 25 Nov. '86

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms): Initiator
Cas No.:
Chemical Name: N/A
Chemical Family: N/A
Formula: N/A

SECTION 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Components (chemical & common names)	%	Threshold Limit Value (units)
500488 (Initiating Material) 65 MG.		
Zirconium	< 50	Unknown
Potassium Perchlorate	> 50	Unknown
500485 (Pressure Composition) 110 MG.		
Titanium Hydride	< 30	Unknown
Potassium Perchlorate	> 65	Unknown

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosion Data)

Boiling Point: N/A
Specific Gravity (H_2O = 1): N/A
Vapor Pressure (mm Hg): N/A
Percent Volatile by Volume (%): N/A
Vapor Density (Air = 1): N/A
Evaporation Rate (_____ = 1): N/A
Solubility in Water: N/A
Reactivity in Water: N/A
Appearance and Odor: Stainless steel body with standard MS connector & threaded output end. Hermetically sealed closure. No odor.

Flash Point: N/A
Flammable Limits in Air % by Volume: Lower N/A, Upper N/A
Extinguishing Media: Water, CO_2, Dry Chem
Auto-Ignition Temperature: > 600°F
Special Fire Fighting Procedures: Sufficient personal protective equipment to prevent injury from metallic shrapnel.

Unusual Fire and Explosion Hazards: Explosive formulation (See Section 2) may explode or ignite when exposed to fire.

SECTION 4 - PHYSICAL HAZARDS

Stability: Unstable [ ] Stable [X] — Conditions to Avoid: Temperatures in excess of 600°F

Incompatibility (Materials to Avoid): Unknown. Handle carefully.

Keep fire away.

Hazardous Decomposition Products: N/A

Hazardous Polymerization: May Occur [ ] Will Not Occur [X] — Conditions to Avoid: N/A

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: Unknown

Signs and Symptoms of Exposure: 1. Acute Overexposure: N/A

2. Chronic Overexposure: N/A

Medical Conditions Generally Aggravated by Exposure: Un-contained initiation of this initiator will expel dangerous shrapnel.

Chemical Listed as Carcinogen or Potential Carcinogen: N/A — National Toxicology Program: Yes [ ] No [X] — I.A.R.C. Monographs: Yes [ ] No [X] — OSHA: Yes [ ] No [X]

OSHA Permissible Exposure Limit: N/A — ACGIH Threshold Limit Value: N/A — Other Exposure Limit Used: N/A

Emergency and First Aid Procedures: N/A

1. Inhalation: N/A

2. Eyes / 3. Skin: Use personal protective equipment to prevent injury from shrapnel, when unit is un-contained.

4. Ingestion: N/A

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): N/A

Ventilation: N/A — Local Exhaust: N/A — Mechanical (General): N/A — Special: Explosive Output — Other: N/A

Protective Gloves: Should be used to the extend possible. — Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: Flame Retardant shop coats & body shielding.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: D.O.D. Hazard Class: 1.4 UN NUMBER: 0206

Storage Compatibility Group: S

Other Precautions: Shipping Name: Electric Squib

Class C Explosive

Steps to be Taken in Case Material is Released or Spilled: Use PPE & Grounding strap to prevent discharge of accumulated electrostatic charges to the unit.

Waste Disposal Methods: Initiate by application of 5 amperes of current to the bridgewire circuit. Unit should be contained to prevent hazards of shrapnel.

IMPORTANT

P/N M10-290 71 A-

HC	0
P	0
R	3

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
Initiator

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name
Hi-Shear Technology Corp.

Address (Number, Street, City, State, and ZIP Code)
24225 Garnier Street
Torrance, California 90505

Emergency Telephone Number
(213) 784-2100

Telephone Number for Information
(213) 784-2113

Date Prepared
October 17, 1988

Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
.142 High Temperature / Propellant B/Ba CrO_4 / Zirconium Potassium Perchlorate Formulation.				

The above ingredients are contained in Hi-Shear Stinger Cartridge 9391960 (PC and the unit is hermetically sealed. No hazard exists in the 'as-built' condition unless exposed to +500°F for an extended period of time.

Section III — Physical/Chemical Characteristics

Boiling Point: N/A		Specific Gravity (H_2O = 1)	2.6
Vapor Pressure (mm Hg.): Not measurable up to 500°F		Melting Point	N/A
Vapor Density (Air = 1): N/A		Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water: Very slight			
Appearance and Odor: Black			

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): N/A	Flammable Limits: Greater than +500°F	LEL: N/A	UEL: N/A
Extinguishing Media: Water			
Special Fire Fighting Procedures: None required.			

Unusual Fire and Explosion Hazards
If initiators are exposed to fire, units will fire causing a flame output of approximately one (1) foot in length.

(Reproduce locally)

Std.

MIS-29071

Section V — Reactivity Data

Stability: Very Stable	Unstable		Conditions to Avoid
	Stable	X	Temperature exceeding +500°F

Incompatibility (Materials to Avoid): Strong acids

Hazardous Decomposition or Byproducts: N/A

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? No Skin? No Ingestion? No

Health Hazards (Acute and Chronic)

No hazard unless fired in unprotected environment - duration of flame and gases is less than one (1) second.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?

Inadequate data

Signs and Symptoms of Exposure

None - in 'as-built' condition

Medical Conditions Generally Aggravated by Exposure

None - in 'as-built' condition

Emergency and First Aid Procedures

Normal burn treatment if exposed to flame.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

N/A

Waste Disposal Method

N/A

Precautions to Be Taken in Handling and Storing

Do not expose to temperatures exceeding 300°F.

Other Precautions

None

Section VIII — Control Measures

Respiratory Protection (Specify Type): None

Ventilation: Nothing Special	Local Exhaust	N/A	Special	N/A
	Mechanical (General)	N/A	Other	N/A

Protective Gloves: N/A

Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: N/A

Work/Hygienic Practices: N/A

Form Approved OMB No. 44-R1367

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: ICI Americas, Inc.	EMERGENCY TELEPHONE NO.: (215) 666-8666
ADDRESS (Number, Street, City, State, and ZIP Code): P.O. Box 819, Rittenhouse Road, Valley Forge, PA 19482	TRADE NAME AND SYNONYMS: Miniature switch, (2,4,6,8 pole)
CHEMICAL NAME AND SYNONYMS: 0.40 - 6.0 second delay time MS	FORMULA: N/A
CHEMICAL FAMILY: Pyrotechnic Device-miniature switch	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	-	-	BASE METAL	-	-
CATALYST	-	-	ALLOYS	-	-
VEHICLE	-	-	METALLIC COATINGS	-	-
SOLVENTS	-	-	FILLER METAL PLUS COATING OR CORE FLUX	-	-
ADDITIVES	-	-	OTHERS	-	-
OTHERS	-	-			

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Potassium dinitrobenzofuroxan/barium styphnate up to 0.045 grams propelling charge and barium chromate, zirconium, zirconium/nickel, potassium perchlorate up to 0.650 grams delay powder.	-	-

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	-	SPECIFIC GRAVITY (H_2O=1)	-
VAPOR PRESSURE (mm Hg.)	-	PERCENT, VOLATILE BY VOLUME (%)	-
VAPOR DENSITY (AIR=1)	-	EVAPORATION RATE (_____=1)	-
SOLUBILITY IN WATER	-		

APPEARANCE AND ODOR: 3/8" square(bronze) bar 1 1/8" to 3" long w/4-16 switch pins + 2-4 squib pins.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	N/A	LEL / UEL
EXTINGUISHING MEDIA	N/A			
SPECIAL FIRE FIGHTING PROCEDURES	N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None. The miniature switch is self contained. It is not a fire hazard.			

(Continued on reverse side)
Form OSHA-20 Rev. May 76

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: N/A

EFFECTS OF OVEREXPOSURE: N/A

EMERGENCY AND FIRST AID PROCEDURES: First Aid for burns

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Flame, temperatures above 160°F, static electrical
	STABLE	X	energy, electrical energy, do not hammer or take apart.

INCOMPATABILITY (Materials to avoid): Power sources, stray electrical currents, static electricity, heat, flames, impact.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Rough handling
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Collect devices and repackage.

WASTE DISPOSAL METHOD: Methods approved for pyrotechnically functioned devices consult contractor/vendor
Comply with CFR parts 270-271.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): None

VENTILATION				
	LOCAL EXHAUST	None	SPECIAL	None
	MECHANICAL (General)	None	OTHER	None

PROTECTIVE GLOVES: Are not required

EYE PROTECTION: Safety glasses are recommended.

OTHER PROTECTIVE EQUIPMENT: Use barricade safety shields for functional evaluation

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store as received in a secure, dry area.

OTHER PRECAUTIONS:

GPO 934-170

Form OSHA-20
Rev. May 72

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form approved OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: ICI Americas, Inc.	EMERGENCY TELEPHONE NO.: 215-666-8666
ADDRESS (Number, Street, City, State, and ZIP Code): P.O. Box 819, Rittenhouse Rd. Valley Forge, PA 19482	
CHEMICAL NAME AND SYNONYMS: 0.10 - 0.36 second delay time, MS	TRADE NAME AND SYNONYMS: Miniature Switch, (2,4,6,8 pole)
CHEMICAL FAMILY: Pyrotechnic devices-miniature switch	FORMULA: N/A

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	-	-	BASE METAL	-	-
CATALYST	-	-	ALLOYS	-	-
VEHICLE	-	-	METALLIC COATINGS	-	-
SOLVENTS	-	-	FILLER METAL PLUS COATING OR CORE FLUX	-	-
ADDITIVES	-	-	OTHERS	-	-
OTHERS	-	-			

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Zirconium/Red iron oxide/infusorial earth ignition powder and potassium dinitrobenzofuroxan/barium styphnate propelling charge up to 0.225 grams Barium chromate, potassium perchlorate, zirconium/nickel, and zirconium up to 0.100 grams delay powder.	-	-

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	-	SPECIFIC GRAVITY (H_2O=1)	-
VAPOR PRESSURE (mm Hg.)	-	PERCENT, VOLATILE BY VOLUME (%)	-
VAPOR DENSITY (AIR=1)	-	EVAPORATION RATE (_____ =1)	-
SOLUBILITY IN WATER	-		

APPEARANCE AND ODOR 3/8" square(bronze) bar 1 1/8" to 3" long w/4-16 switch pins + 2-4 squib pi

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	FLAMMABLE LIMITS N/A		LEL	UEL
EXTINGUISHING MEDIA N/A				
SPECIAL FIRE FIGHTING PROCEDURES N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS None. The miniature switch is self contained. It is not a fire hazard.				

(Continued on reverse side)

Form Approved OMB No. 44-R1387

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: ICI Americas Inc.	EMERGENCY TELEPHONE NO.: (215) 666-8666
ADDRESS (Number, Street, City, State, and ZIP Code): P.O. Box 819, Rittenhouse Rd., Valley Forge, PA 19482	
CHEMICAL NAME AND SYNONYMS: Instant MS	TRADE NAME AND SYNONYMS: Miniature switch (2,4,6,8 pole)
CHEMICAL FAMILY: Pyrotechnic device-miniature switch	FORMULA: N/A

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	-	-	BASE METAL	-	-
CATALYST	-	-	ALLOYS	-	-
VEHICLE	-	-	METALLIC COATINGS	-	-
SOLVENTS	-	-	FILLER METAL PLUS COATING OR CORE FLUX	-	-
ADDITIVES	-	-	OTHERS	-	-
OTHERS	-	-			

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Potassium dinitrobenzofurazan/barium styphnate up to 0.038 grams propelling charge.	-	-

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	-	SPECIFIC GRAVITY (H_2O=1)	-
VAPOR PRESSURE (mm Hg.)	-	PERCENT, VOLATILE BY VOLUME (%)	-
VAPOR DENSITY (AIR=1)	-	EVAPORATION RATE (_____ =1)	-
SOLUBILITY IN WATER	-		

APPEARANCE AND ODOR 3/8" square(bronze) bar 1 1/8" to 2 1/8" long w/4-16 switch pins + 2-4 squib pins.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS N/A	Lel	Uel
EXTINGUISHING MEDIA	N/A			
SPECIAL FIRE FIGHTING PROCEDURES	N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None. The miniature switch is self contained. It is not a fire hazard.			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
N/A

EFFECTS OF OVEREXPOSURE
N/A

EMERGENCY AND FIRST AID PROCEDURES
First Aid for burns

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Flames, temperatures above 160°F, static electrical
	STABLE	X	energy, electrical energy, do not hammer or take apart.

INCOMPATABILITY (Materials to avoid)
Power sources, stray electrical currents, static electricity, heat, flame, impact.

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Rough handling
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Collect devices and repackage.

WASTE DISPOSAL METHOD
Methods approved for pyrotechnically functioned devices consult contractor/vendor.
Comply with CFR parts 270-271.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
None

VENTILATION				
	LOCAL EXHAUST	None	SPECIAL	None
	MECHANICAL (General)	None	OTHER	None

PROTECTIVE GLOVES
Are not required

EYE PROTECTION
Safety glasses are recommended

OTHER PROTECTIVE EQUIPMENT
Use barricade safety shields for functional evaluation.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store as received in a secure, dry area.

OTHER PRECAUTIONS

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: N/A

EFFECTS OF OVEREXPOSURE: N/A

EMERGENCY AND FIRST AID PROCEDURES: First Aid for burns

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Flame, temperatures above 160°F, static electrical energy
	STABLE	y	Electrical energy, do not hammer or take apart

INCOMPATABILITY (Materials to avoid): Power sources, stray electrical currents, static electricity, heat flame, impact.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Rough handling.
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect devices and repackage.

WASTE DISPOSAL METHOD

Methods approved for pyrotechnically functioned devices consult contractor/vendor

Comply with CFR parts 270-271

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): None

VENTILATION				
	LOCAL EXHAUST	None	SPECIAL	None
	MECHANICAL (General)	None	OTHER	None

PROTECTIVE GLOVES: Are not required

EYE PROTECTION: Safety glasses are recommended

OTHER PROTECTIVE EQUIPMENT: Use barricade safety shields for functional evaluation

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store as received in a secure, dry area.

OTHER PRECAUTIONS

Form OSHA-20
Rev. May 72

EXHIBIT E

Please make a tax-deductible donation to GlobalSecurity.org - Click Here

20mm Ammunition

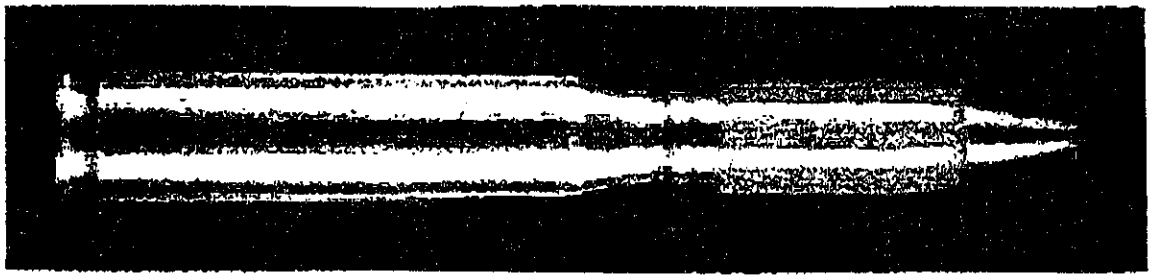
Aircraft using the M61A1 20mm cannon include the F/A-18 and the F-14. The Phalanx Close-In Weapons System (CIWS) is a fast-reaction, rapid-fire 20-millimeter gun system that provides US Navy ships with a terminal defense against anti-ship missiles that have penetrated other fleet defenses. Designed to engage anti-ship cruise missiles and fixed-wing aircraft at short range, Phalanx automatically engages functions usually performed by separate, independent systems such as search, detection, threat evaluation, acquisition, track, firing, target destruction, kill assessment and cease fire.

- M39
- M50
- M53 API
- M56 HEI
- M56A3 HE/I
- M210 HEI
- M242 HE-I-T
- M246 HEIT-SD
- M246 HEI-T
- M601 API-T
- M775 API-T
- M940 MPT-SD
- Mk 149 (Mod2, 4) CIWS
- Oerlikon S
- PGU-28/B SAP-HE
- U.S. Navy Mark 100

Ammunition for the Objective Individual Combat Weapon (OICW)

- XM1018 High Explosive Air Bursting (HEAB)
- Training - Practice (TP)
- Training - Practice Spotter (TP-S)
- Blank

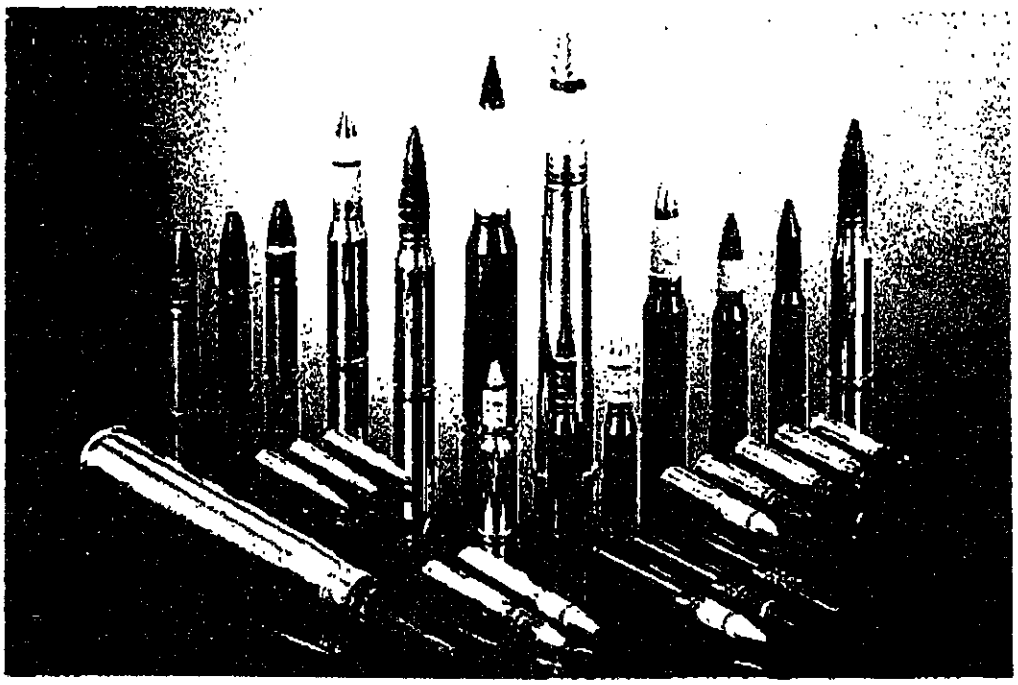
The 20mm Armor Piercing Discarding Sabot (APDS), Depleted Uranium sub-caliber penetrator was changed to Tungsten in 1988.



Sources and Resources

THE WEBSITE FOR DEFENCE INDUSTRIES - ARMY

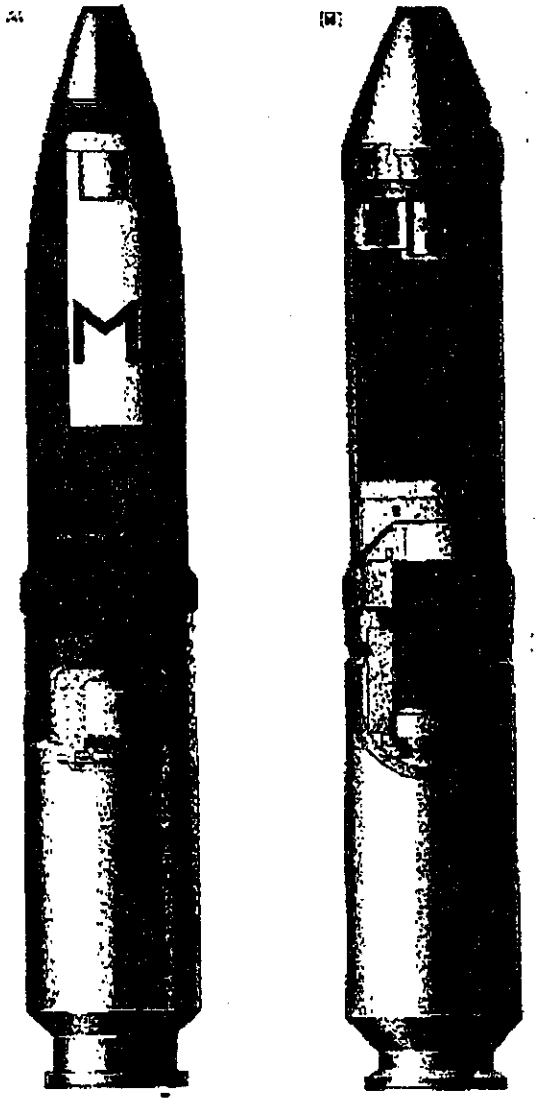
Return to Giat Industries

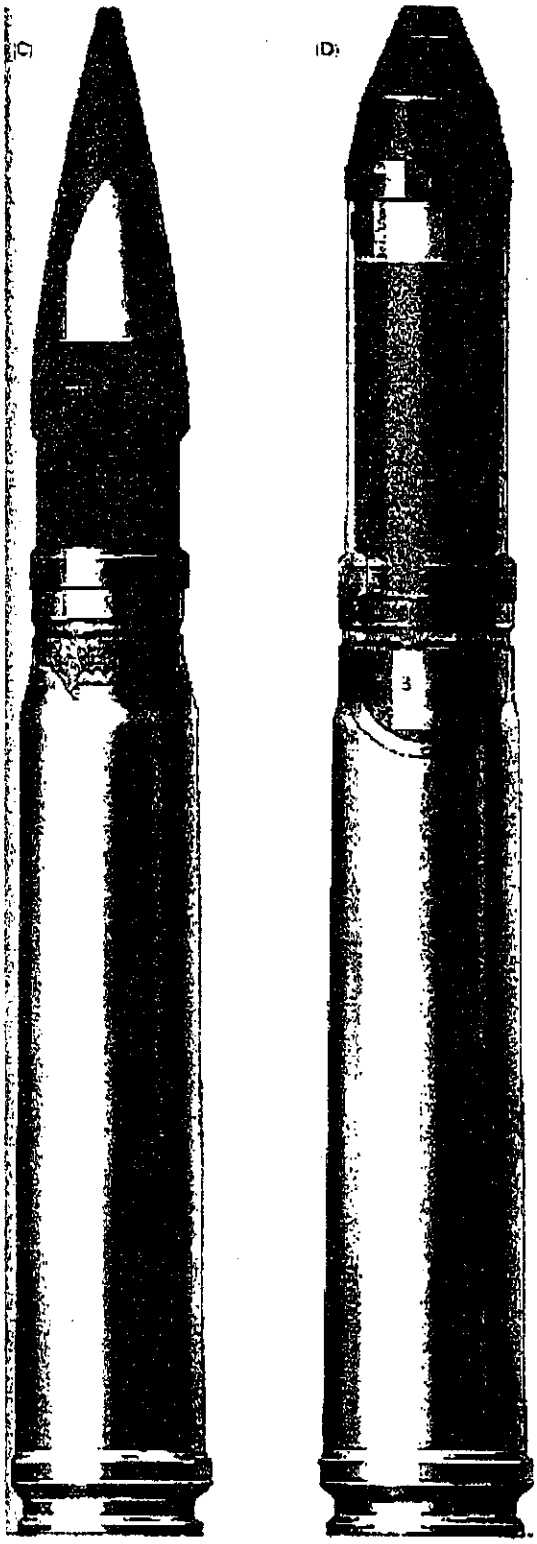


Return to Giat Industries

30 MM Ammunition

(actual size)





A. MK108 Mine/tracer shell for air to air combat.

Muzzle velocity: 500m/sec (1640ft/sec)

B. MK108 **Incendiary shell for air to air combat.**
(same velocity as above)

C. MK103 **Tungsten carbide core armor-piercing for use on heavy armored tanks.**

Muzzle velocity: 960m/sec (3150ft/sec)

D. MK103 **Incendiary/tracer shell for air to air combat.**
Muzzle velocity: 900m/sec (2950ft/sec)

IL2 Gun Effectiveness Tables

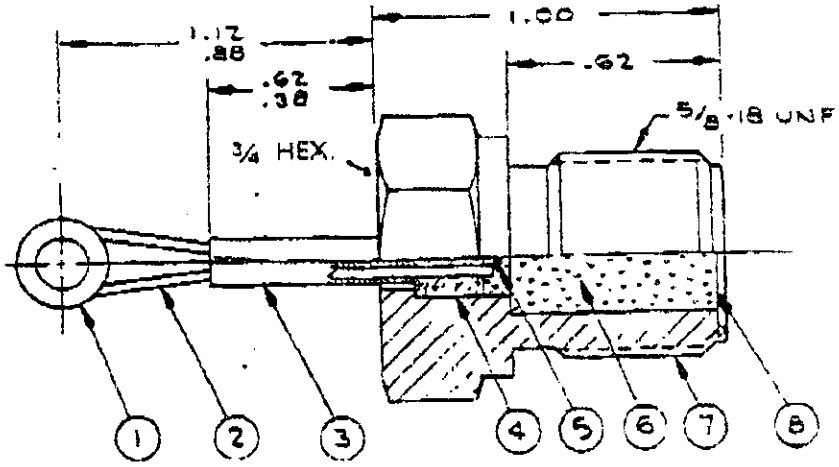
Ballistics chart researched and created by Juraj Vanovcan

Twelve O'Clock High!
Luftwaffe and Warbirds
Ammunition and ballistic information page

TYPICAL INITIATING DEVICES

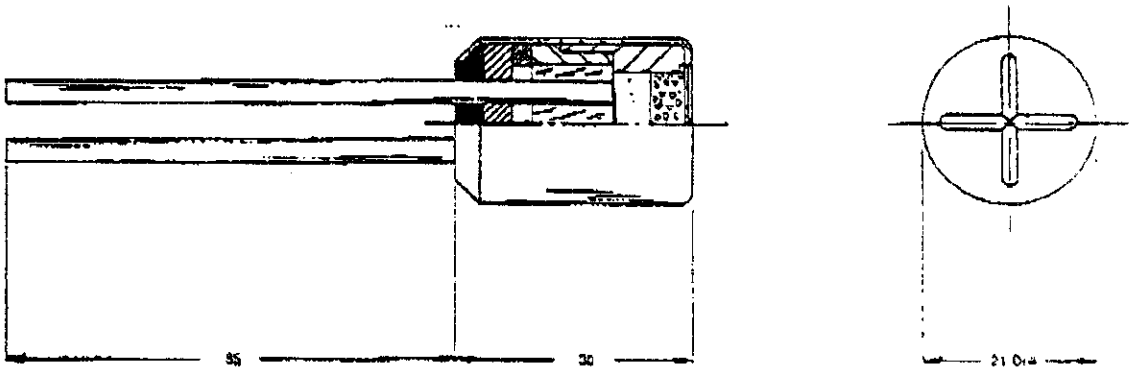
TECHNICAL DATA SHEET
HOLEX MODEL 1753
IGNITION PRIMER

1 Safety Shunt
2 Solid 20 guage tin plated steel leads
3 Polyvinylchloride insulation
4 Glass-To-metal seal
5 Prime bridgewire
6 Explosive load
7 Fusion tin plated steel body
8 NRC lacquer sealed aluminum closure

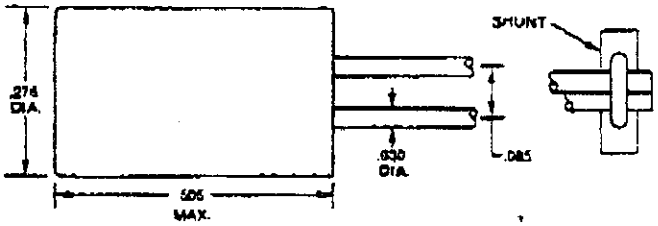


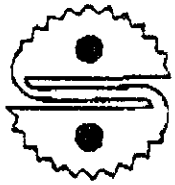
INITIATOR

ELECTRICAL AND FIRING CHARACTERISTICS:
NO-FIRE — 1.0 AMP OR 1.0 WATT FOR 5 MINUTES
ALL-FIRE CURRENT — 3.5 AMPS FOR 20 MS MAX
BRIDGEWIRE RESISTANCE — 1.0 ±0.1 OHM MEASURED .50 TO .62 INCHES FROM INITIATOR
ELECTROSTATIC DISCHARGE, PINS-TO-CASE AND PIN-TO-PIN — 25,000 VOLTS DC DISCHARGED FROM A 500 PICOFARAD CAPACITOR THROUGH A 5,000 OHM RESISTOR.



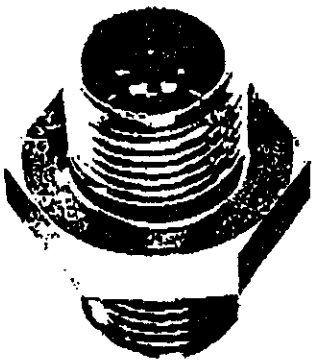
TYPE HSR SQUIB



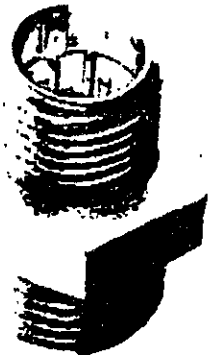


BRIDGE ELEMENT

THE HOLEX POWER CARTRIDGE



6100 SERIES



6200 SERIES

6300 SERIES

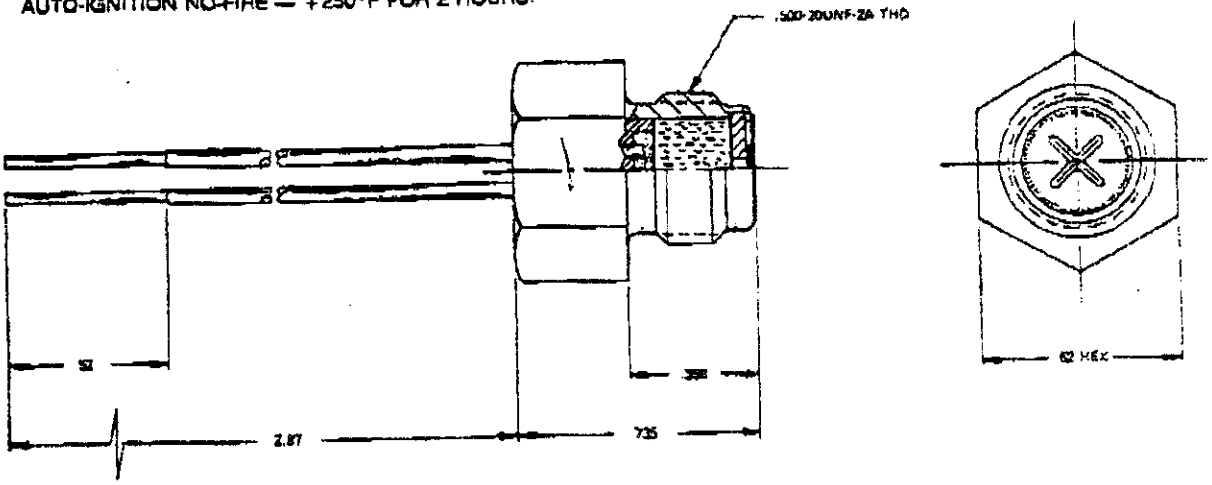
GAS GENERATOR

1. ELECTRICAL AND FIRING CHARACTERISTICS:

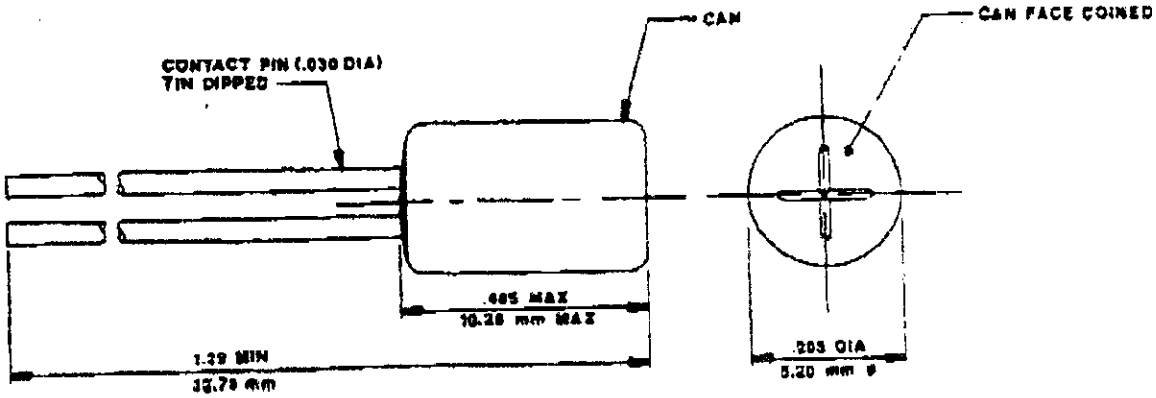
NO-FIRE CURRENT — 0.100 $^{+0.000}_{-0.004}$ AMP FOR 5 MINUTES OVER A TEMPERATURE RANGE OF −65°F TO +160°F
ALL-FIRE CURRENT — 3.5 AMPS FOR 20 MILLISECONDS OVER A TEMPERATURE RANGE OF −65°F TO +160°F
BRIDGEWIRE RESISTANCE — 5.75 ± 0.50 OHMS

2. PERFORMANCE DATA:

OUTPUT — 450 ± 100 PSIG IN A 30CC VOLUME
OPERATING TEMPERATURE — −65°F TO +160°F
FUNCTION TIME:
FROM APPLICATION OF 3.5 AMPS UNTIL FIRST INDICATION OF PRESSURE — 20 MILLISECONDS MAXIMUM
FROM FIRST INDICATION OF PRESSURE UNTIL PEAK PRESSURE — 85 ± 35 MILLISECONDS
RESIDUAL PRESSURE — 70 PSIG MINIMUM 10 SECONDS AFTER APPLICATION OF 3.5 AMPS
LEAKAGE — LESS THAN 1 x 10^{-5} CC/SECOND HELIUM AT ONE ATMOSPHERE PRESSURE DIFFERENTIAL
AUTO-IGNITION NO-FIRE — +250°F FOR 2 HOURS.

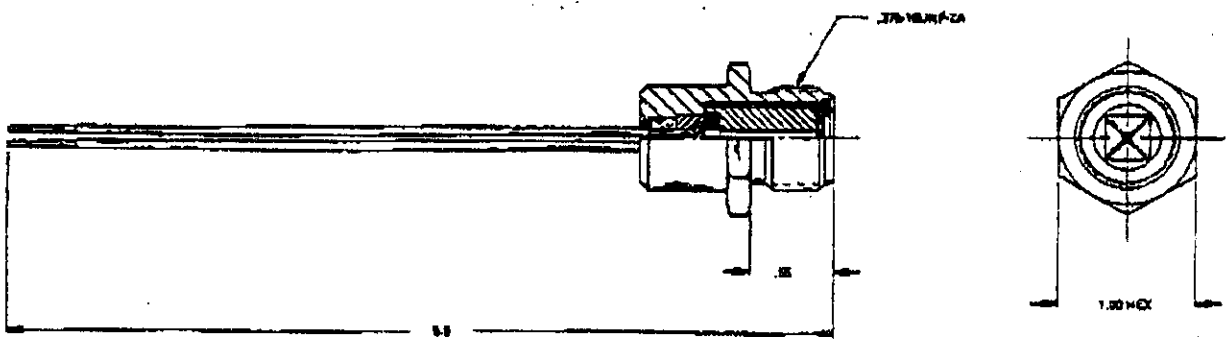


MINIATURE IGNITER

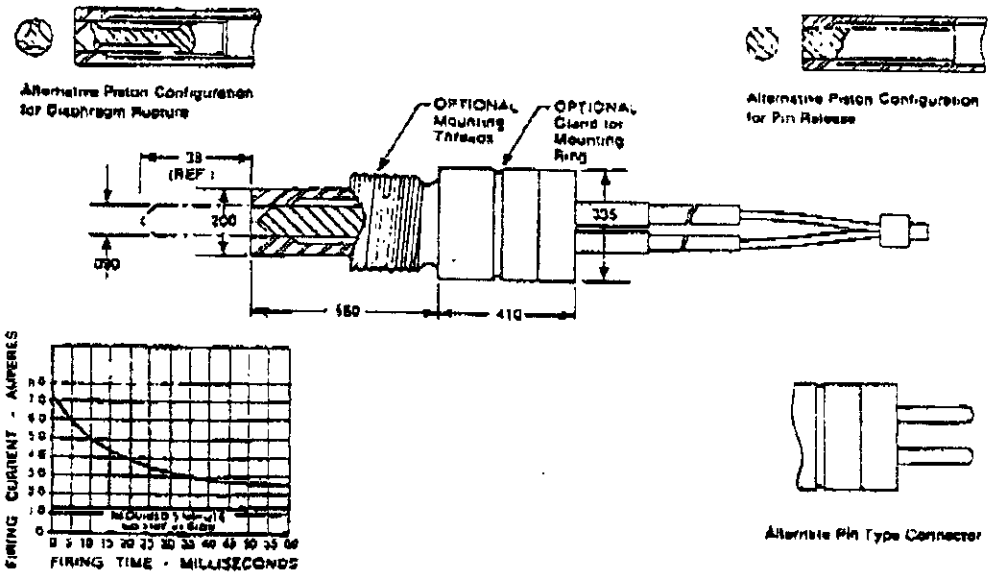


PRESSURE CARTRIDGES

1. ELECTRICAL AND FIRING CHARACTERISTICS:
   NO-FIRE CURRENT — 1.0 AMP DC OR AC RMS 60 CPS OR ONE WATT, ALL FOR 5 MINUTES MINIMUM AT -65°F TO +160°F BOTH CIRCUITS SIMULTANEOUSLY WHICHEVER IS MOST SEVERE AFTER EACH BRIDGEWIRE HAS CARRIED 0.025 AMP TEST CURRENT FOR ONE HOUR.
   BRIDGEWIRE RESISTANCE — 1.0 ±0.1 OHM THRU LEADS AT 60°F TO 80°F
   DIELECTRIC STRENGTH — 500 VAC RMS MAXIMUM, 60 CPS FOR ONE MINUTE BETWEEN EACH PAIR OF LEADS SHORTED TO CASE. MAXIMUM LEAKAGE CURRENT — 100 MICROAMPERES.
   PRESSURE RISE SHALL START IN 0.020 SECOND MAXIMUM AFTER APPLICATION OF 3.5 AMPS TO EITHER BRIDGEWIRE WHEN STABILIZED AT +40°F TO +120°F AFTER EACH BRIDGEWIRE HAS CARRIED 0.025 AMP TEST CURRENT FOR ONE HOUR.
2. LEADS TINNED PER MIL-S-6872 TO DIMENSION OF .500 ±.120 USING SN60 PER QQ-S-571.



THE SERIES PA 1100 PISTON ACTUATOR



DOD 4145.26-M

DEPARTMENT OF DEFENSE

DOD CONTRACTORS' SAFETY MANUAL FOR AMMUNITION AND EXPLOSIVES

July 1997

Under Secretary of Defense
Acquisition and Technology

CHAPTER 9

STORAGE OF EXPLOSIVES AND AMMUNITION

A. General

A properly sited segregated and separate storage area is preferred for explosives storage. Earth-covered magazines (igloo or other subsurface) offer the greatest protection to explosives. Such magazines are preferred for the storage of all explosives. Earth-covered magazines provide protection from weather and fire, and relatively constant temperature control.

B. Storage considerations

Factors to consider when designating a structure for explosive storage are:

1. Magazine construction and location.

2. Quantity and characteristics of explosives to be stored.

C. Magazine operational regulations

1. No loose ammunition components, packing materials, conveyors, skids, dunnage, empty boxes, or other such items shall be stored in magazines containing ammunition or explosives.

2. No crew shall work in a spot that requires passing a second crew's work aisle or position to reach an exit in a magazine. The number of crews should not exceed the number of exits. Doors shall remain unlocked and permit rapid egress.

3. Flammable liquids, except when used as the chemical filler of ammunition, or as a prepackaged storable liquid propellant, shall not be stored in magazines containing explosives.

D. Stacking

1. Ammunition and explosives should be stored in original shipping containers or equivalent. Explosives or ammunition in stacks should be grouped and identified according to lots. General rules set forth in subsections D.2 and D.3, below, shall be followed in the absence of applicable storage drawings.

2. Methods used for stacking shall provide for good ventilation to all parts of the stack. Adequate dunnage shall be used for this purpose.

3. Aisles shall be maintained so that units in each stack may be inspected, inventoried, and removed for shipment or surveillance tests. Block storage is permitted, provided adequate ventilation of stacks exists. Unobstructed aisles shall be maintained to permit rapid egress.

4. Only one light box, pallet, or unit should be allowed per lot in storage. Stacked light units should be readily visible and immediately accessible.

E. Loose rounds, damaged containers

Loose rounds of ammunition, or single fiber containers with rounds therein, shall not be stored in magazines containing ammunition items packed in original shipping containers; however, they may be stored in magazines set aside for their exclusive storage. Incomplete boxes of ammunition and explosives may be stored in magazines containing complete boxes packed in original shipping containers. Conspicuously marked to identify contents and quantities, the incomplete boxes shall be placed in designated locations. Explosives and ammunition in damaged containers should not be stored in a magazine with ammunition in serviceable containers. Such containers should be repaired or the contents transferred to new or serviceable containers. Open containers and containers with covers not securely fastened shall not be allowed in magazines. Containers that have been opened shall be properly closed before being restored. Stored containers should be free from loose dust and grit.

F. Repairs to magazines

1. Repairs should not be made to the interiors of magazines containing bulk explosives. Repairs to roofs, ventilators, lightning rods, doors and other parts of, or appendages to, the exteriors of magazines containing bulk explosives shall not normally require removing the explosives. Minor repairs may be made to the interiors of magazines containing finished ammunition or ammunition components.

2. The general safety requirements set forth in this manual, particularly the elimination of fire hazards, shall be followed when magazines are repaired. When necessary, baffles and screens should be used to confine sparks and flames to heating apparatus.

G. Open storage (outdoors)

Open storage of A&E is prohibited.

H. Storage of bulk initiating explosives

Bulk initiating explosives shall not be stored dry nor exposed to the direct rays of the sun. Containers of ample size to hold the double bag of explosives are used for normal storage. Covers designed and constructed to prevent friction and pinch points should be used. Covers of shipping containers used for long-term storage shall be equipped with a port for observing the level of the liquid contents. The viewing port shall have a transparent plastic cover proven compatible with the initiating explosives being stored. Bulk initiating explosives may, for expediency, be stored in shipping containers without viewing ports, provided they are stored in magazines that will prevent freezing; with containers on end, only one tier high; with passageways for inspection and handling. Bags of initiating explosives in storage containers shall be under distilled water. Alcohol may be added to the distilled water to prevent freezing.

I. Rockets and rocket motors

1. In aboveground magazines, rockets and rocket motor items (in a propulsive state) should be pointed in the direction least exposing personnel and property in case of fire or explosion.

2. Rockets should be stored in dry, cool magazines, out of the direct rays of the sun. Prolonged exposure of rocket ammunition to either high or low temperatures may increase the normal rate of deterioration or render the motors more susceptible to ignition if handled improperly later.

County of San Bernardino
DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES • HAZARDOUS MATERIALS FIELD SERVICES
385 North Arrowhead Avenue, San Bernardino, CA 92415-0160 • (909) 387-3080
HAZARDOUS WASTE GENERATOR AND HAZARDOUS MATERIAL HANDLER
INSPECTION REPORT

Facility Name: Hydro Mobile Systems Co. Date: 6/19/95
Street Address: 2824 N Locust Establishment No.: 41023724
City: Rialto Zip Code: 92376 EPA No.: —
Business Contact: Don Miller Business Phone No.: 320/663 6742 Number of Employees: 5

Refer to Title 19/22 of the California Code of Regulations (CCR), Chapters 6.5 and 6.95 of the Health and Safety Code (HSC). The referring Code sections are either in Violation (V) of or in Compliance (C) with the Hazardous Waste or Hazardous Materials laws and regulations, or compliance is Not Applicable, Not Assessed or Unknown (N).

GENERAL REQUIREMENTS		V	C	N	CORRECTIONS/NARRATIVES
1. No Haz Waste Generator Permit	CHSC 25154				
2. Authority to Inspect/Investigate/Inquiry	CHSC 25185				
3. Haz Waste Determination not made (T8)	CCR 66262.11				Facility has moved out of the
4. No Haz Waste EPA Number (T9)	CCR 66262.12(a)				boundary of this site about 1 year
5. Haz Waste treated w/o DTSC Permit (T1)	CCR 66270.1				ago.
LABELING AND STORAGE					All haz material was removed
6. Haz Waste stored more than 90 days (T4)	CCR 66262.34(a)				and transported to another Hydro
7. Start Date not on labels (T5B)	CCR 66262.34(f) (1)				site
8. Haz Waste containers mislabeled (T5B)	CCR 66262.34(f) (2)				
9. No labels on Haz Waste containers (T5C)	CCR 66262.34(f) (3)				
MANAGEMENT OF CONTAINERS					
10. Haz Waste containers not closed (T6B)	CCR 66265.173				
11. Haz Waste in incompatible container (T6B)	CCR 66265.172				Inactivate permits + exist.
12. Haz Waste containers not closed (T6F)	CCR 66265.173(a)				
13. Haz Waste containers leaking (T6E)	CCR 66265.171(a)				
14. Storage Area not inspected weekly (T6B)	CCR 66265.174				
15. Incompatible Haz Waste storage (T7B)	CCR 66265.177(c)				
16. Mismanagement of Hazardous Waste	CHSC 25189				
17. Mismanagement of Waste Batteries (T9B)	CCR 66266.81				
MANAGEMENT OF WASTE OIL					
18. Unlawful management of Waste Oil	CHSC 25250.4				
19. Waste Oil contaminated w/ Haz Waste (T2)	CHSC 25250.7				
20. Permit for Waste Oil Incomplete	CHSC 25250.8(b) (1)				
21. Waste Oil Filters improperly managed	CCR 66266.130				
HAZARDOUS WASTE MANIFESTS					
22. Haz Waste transported w/o Manifest (T5)	CCR 66262.20(a)				
23. Haz Waste Manifest Incomplete (T5B)	CCR 66262.23(a)				
24. No Manifest sent to DTSC (T5C)	CCR 66262.23(c) (1)				
RECORDS					
25. No Receipts for Waste Oil	CHSC 25250.8(b)				
26. Failure to retain Manifest 3 yrs (T3B)	CCR 66262.40(c)				
27. Biennial Report not kept 3 yrs (T3D)	CCR 66262.40(b)				
28. Failure to retain Analysis 3 yrs (T3E)	CCR 66262.40(c)				
29. No Biennial Report filed w/ DTSC (T3C)	CCR 66262.41(a)				
30. Training Records unavailable (T7B)	CCR 66265.16				
DISPOSAL AND TRANSPORTATION					
31. Illegal disposal/abandonment of Haz Waste	CHSC 25189.5(b)				
32. Illegal disposal Waste Oil to Ground	CHSC 25250.3(b)				
33. Illegal transportation of Haz Waste	CHSC 25163				
34. Haz Waste transporter Unregistered	CCR 66263.17				Hydro transfered
BUSINESS PLANS AND CONTINGENCY DOCUMENTS					6/19/95
40. Failure to obtain Haz Mat Handler Permit	CHSC 25515				66
41. Failure to establish a Business Plan (T7B)	CHSC 25505.5				
42. Failure to submit/update a Bus. Plan (T8T)	CHSC 25508				
43. Failure to report a release of Haz Mats	CHSC 25507				
44. Authority to Inspect facility for Haz Mats	CHSC 25548				
45. Actively Haz Mats Registration not filed	CHSC 25505(a)				

☑ Inspection ☐ NOV Issued ☐ Third Party
☐ Reinspection ☐ C.D. Date Total Time 2.0
☐ Complaint ☐ Tel.Tic. No. Ref. Bill

Inspector: Gary Beck Received by:

SBCHMD 002941

San Bernardino County
Sheriff's Office
EXPLOSIVES CONTROL UNIT

COMPLIANCE INSPECTION REPORT

DR No. 553 DATE: August 8, 1989

Company Name: GENERAL DYNAMICS POMONA DIV. Address: 9006 UTICA Rancho Cuca Phone: 629-7511

Person Contacted (Title): EVA SAYLOR - SECURITY Address: 7457 NEWCOMB SAN BERDO. Phone: 864-7323

Type of Magazines: CLASS I + III Type of Explosives: A/B/C/SQUIBBS/DETONATORS

SECTION A: INITIAL INSPECTION

An examination of your permit, premises, records, storage, and operations has disclosed the following noncompliance of laws and regulations:

7 CLASS I MAGAZINES - CHK OK
3 CLASS III MAGAZINES - CHK OK } RIALTO
BLDG 800 - 1 CLASS I W/DETONATORS
BLDG 801 - 2 CLASS II T
BLDG 600 - 8 FLOODABLE CLASS C FLOOR CABINETS
BLDG 601 - 2 CLASS II + 1 CLASS III PORTABLE

I understand that continued failure to comply with the laws and regulations can result in subsequent action being taken. The above violations must be corrected within _____ days.

Signed [signature] Date 8-8-, 1989

Inspected By [signature] Date 8-8-, 1989

SECTION B: FOLLOW-UP INSPECTION FOR COMPLIANCE

The following items are still not in compliance with the laws and regulations:

Signed _____ Date _____, 19__

Inspected By _____ Date _____, 19__

SECTION C: DISPOSITION OF INSPECTION

XX All items are in compliance with the laws and regulations.

_____ Recommend citation be issued. Willful noncompliance with laws and regulations.

COMMENTS: _____

Inspected By _____ Date _____, 19__

Reviewed By _____ Date _____, 19__

For further information regarding this inspection, contact the San Bernardino County Sheriff's Office, Explosives Control Unit, (714) 383-2511, extension 263.

Copy to:
White copy — Explosives Control Unit Records
Canary copy — District Attorney

ENCLOSURE 6

EPA Hazardous Waste Permit Application for Broco, Inc., with map showing open burn/open detonation site (believed to have been used by General Dynamics)

(Fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S[illegible]

FORM 8 RCRA — EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F[illegible]

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
R	3 1 8 1 1 9	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility EPA I.D. Number in Item I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

[X] 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

YR.	MO.	DAY
6 6	0 5	0 1

[ ] 2. NEW FACILITY (Complete item below.)

FOR NEW FACILITIES PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY

B. REVISED APPLICATION (place an "X" below and complete Item I above)

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.
1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	O

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP Y/A C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	55 gal drums 13,750	G		7				
2	S 0 1	85 gal drums 12,750	G		8				
3	T 0 4	See Space C /	N		9				
4					10				

SBCHMD 000558

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR DESCRIBING OTHER PROCESSES (code "T") FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

Treatment includes detonation of explosive or pyrotechnic chemicals and pyrolysis.

Treatment also include reaction by neutralization of certain chemicals and hazardous waste materials.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.
Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

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Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W CAT080022148

FOR OFFICIAL USE ONLY: W DUP | C DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	250	T	S01	
2	F002	250	T	S01	
3	F003	250	T	S01	
4	F004	250	T	S01	
5	F005	250	T	S01	
6	F006	250	T	S01	
7	F007	250	T	S01	
8	F008	250	T	S01	
9	F009	250	T	S01	
10	F010	250	T	S01	
11	F011	10	T	S01	
12	F012	10	T	S01	
13	F013	10	T	S01	
14	F014	50	T	S01	
15	F015	50	T	S01	
16	F016	5	T	S01	
17	P001	500	T	S01	
18	P002	500	T	S01	
19	P003	500	T	S01	
20	P004	500	T	S01	
21	P005	500	T	S01	
22	P006	500	T	S01	
23	P007	500	T	S01	
24	P008	500	T	S01	
25	P009	500	T	S01	
26	P010	500	T	S01	

SBCHMD 006560

Continued from page 3

IV. DESCRIPTION OF HAZARDOUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3

See Attached Sheet

We have listed all wastes that we possibly would have to store. Please understand that we are a small operation, and would most likely never have all these even in small quantities in a one year period.

EPA I.D. NO. (enter from page 1)

F 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
34 09 01.5 150	117 25 01.0 150

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)
E BROCO, INCORPORATED	714-623-2544

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F 2040 N. Towne Avenue	G Pomona	CA	91767

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
PAUL A. BROWER, PRESIDENT BROCO, INC.	Paul A. Brower	1/20/81

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

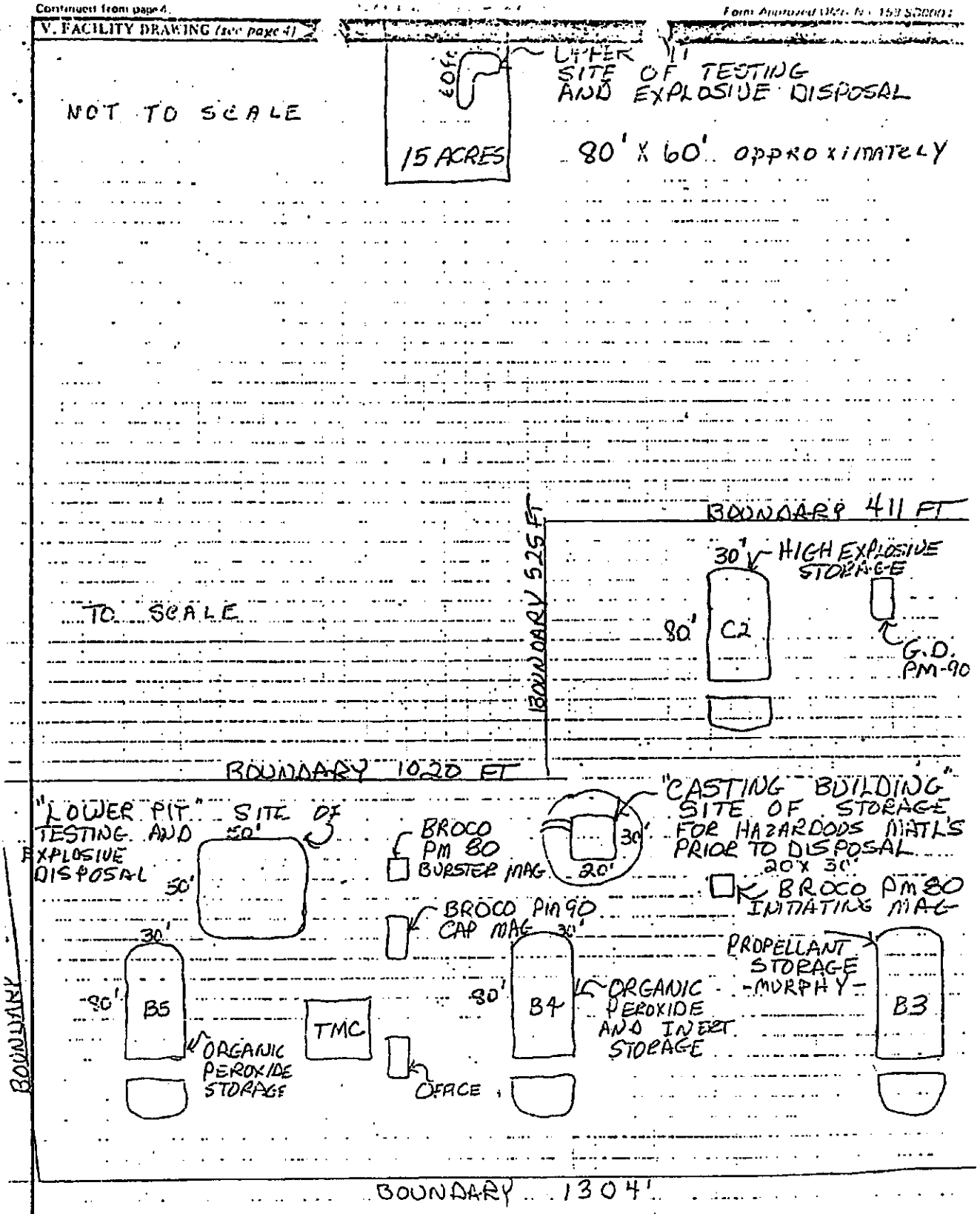
A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
PAUL A BROWER, PRESIDENT BROCO, INC.	Paul A. Brower	1/20/81

CONTINUE ON PAGE 5

SBCHMD 00655 61

Form Approved OMB No. 158-S0000

V. FACILITY DRAWING (see page 4)



SBCHMD 006570

ENCLOSURE 7

Excerpts from Broco Inc. Site Report
(Radian Corporation, 1990) with references to
General Dynamics' on-site facility and map of
General Dynamics' storage magazines

file Broco Denova

RADIAN CORPORATION

Revised OP--March 1990

B 3(h) of the Permit Procedures Manual (PPM), are not addressed in this section as none exist at the Broco TSF.

2.1 Subsection B.1--Site Location and History

Broco-owned land encompasses approximately 25 acres and is located approximately 4-1/2 miles northwest of downtown Rialto, and approximately two miles southeast of the Interstate 15 and Riverside Avenue intersection. Approximately 3.5 acres of land are used for the TSF. The TSF is located northeast of the adjacent Fontana Sanitary Landfill. Other area businesses include several fireworks firms that manufacture and assemble pyrotechnic displays, a trucking firm specializing in the transport of explosives, and several firms engaged in the storage and testing of explosives, munitions, and other hazardous materials and wastes. Figure 2-1 shows an area topographic map and Figure 2-2 (in pocket) shows a facility site map.

This area was previously used by the U.S. Army during World War II for the storage of explosives and manufacture of munitions. The U.S. Army's facilities consisted of a network of bunkers and railcar defilades. The installation was decommissioned by the Army in the 1950's and has been developed by private industry for the storage, manufacture, assembly, and testing of a variety of explosive and pyrotechnic materials. Many structures still remain from the Army installation. These structures include several igloo-shaped explosives storage magazines. Broco and other companies still use these bunkers/magazines for the storage of commercial and military explosive products. Other companies maintaining facilities in this area are Aerojet, General Dynamics, International Technologies (formerly Dupont-King), Trojan Fireworks, PyroSpectacular and Zambelli Fireworks.

RADIAN CORPORATION

AUSTIN
Corporate Headquarters
8501 Mo-Pac Blvd.
P.O. Box 201088
Austin, TX 78720-1088
(512) 454-4797
FAX 512-454-7129

Summit Park
Austin, TX
(512) 244-0100
FAX 512-244-0160

DENVER
1801 Broadway, Suite 1000
Denver, CO 80202
(303) 292-0800
FAX 303-292-5860

HOUSTON
10675 Richmond Ave., Suite 190
Houston, TX 77042
(713) 785-9225
FAX 713-785-9390

LOS ANGELES
2250 E. Imperial Hwy., Suite 140
El Segundo, CA 90245
(213) 640-0045
FAX 213-640-8940

7 Corporate Park, Suite 240
Irvine, CA 92714
(714) 261-6611
FAX 714-261-6505

MILWAUKEE
5101 West Beloit Rd.
Milwaukee, WI 53214
(414) 643-2701
FAX 414-643-2699

NASHVILLE
50 Century Blvd., Suite 323
Nashville, TN 37214
(615) 885-4281
FAX 615-885-4395

RALEIGH / DURHAM
3200 E. Chapel Hill Rd./Nelson Hwy.
P.O. Box 13000
Research Triangle Park, NC 27709
(919) 541-9100
FAX 919-541-9013

Perimeter Park
Morrisville, NC
(919) 481-0212
FAX 919-460-1631

ROCHESTER
155 Corporate Woods, Suite 100
Rochester, NY 14623
(716) 292-1870
FAX 716-292-1878

SACRAMENTO
10395 Old Placerville Road
Sacramento, CA 95827
(916) 362-5332
FAX 916-362-2318

WASHINGTON, D.C.
2455 Horsepen Road, Suite 250
Herndon, VA 22071
(703) 834-1500
FAX 703-834-1512

HONG KONG
2001 Bond Center
GPO Box 12606
Hong Kong
5-231016
FAX (05) 868-1686

LONDON
Radian Limited
Duke's Court
Duke Street
Woking
Surrey GU21 5BH
UK
(0483) 729307
FAX (0483) 725233

TAIWAN
3Fl., -4, No. 392 Tun Hua S. Rd.
Taipei, Taiwan, R.O.C.
(02) 7816161
FAX (02) 775-5906

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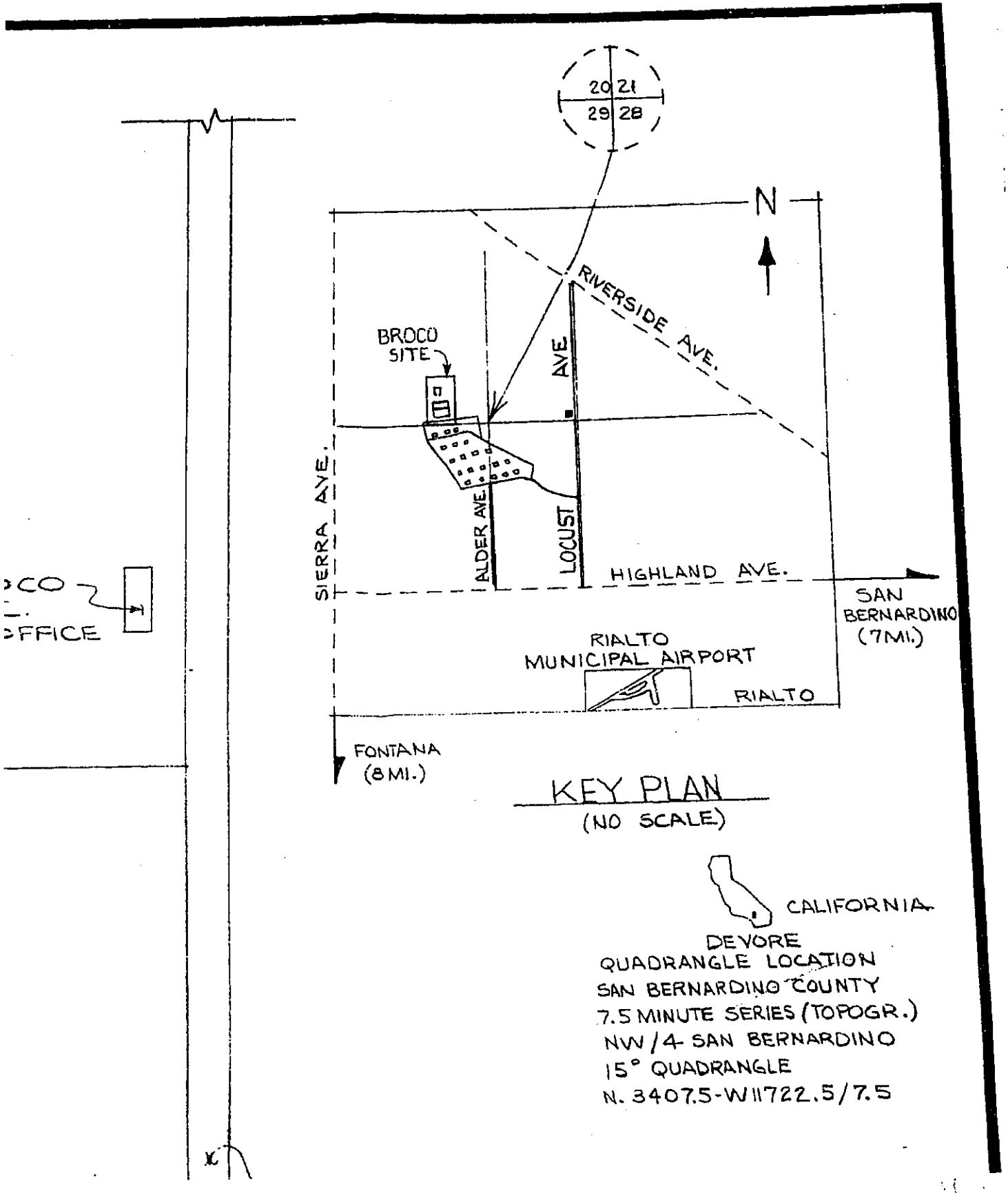
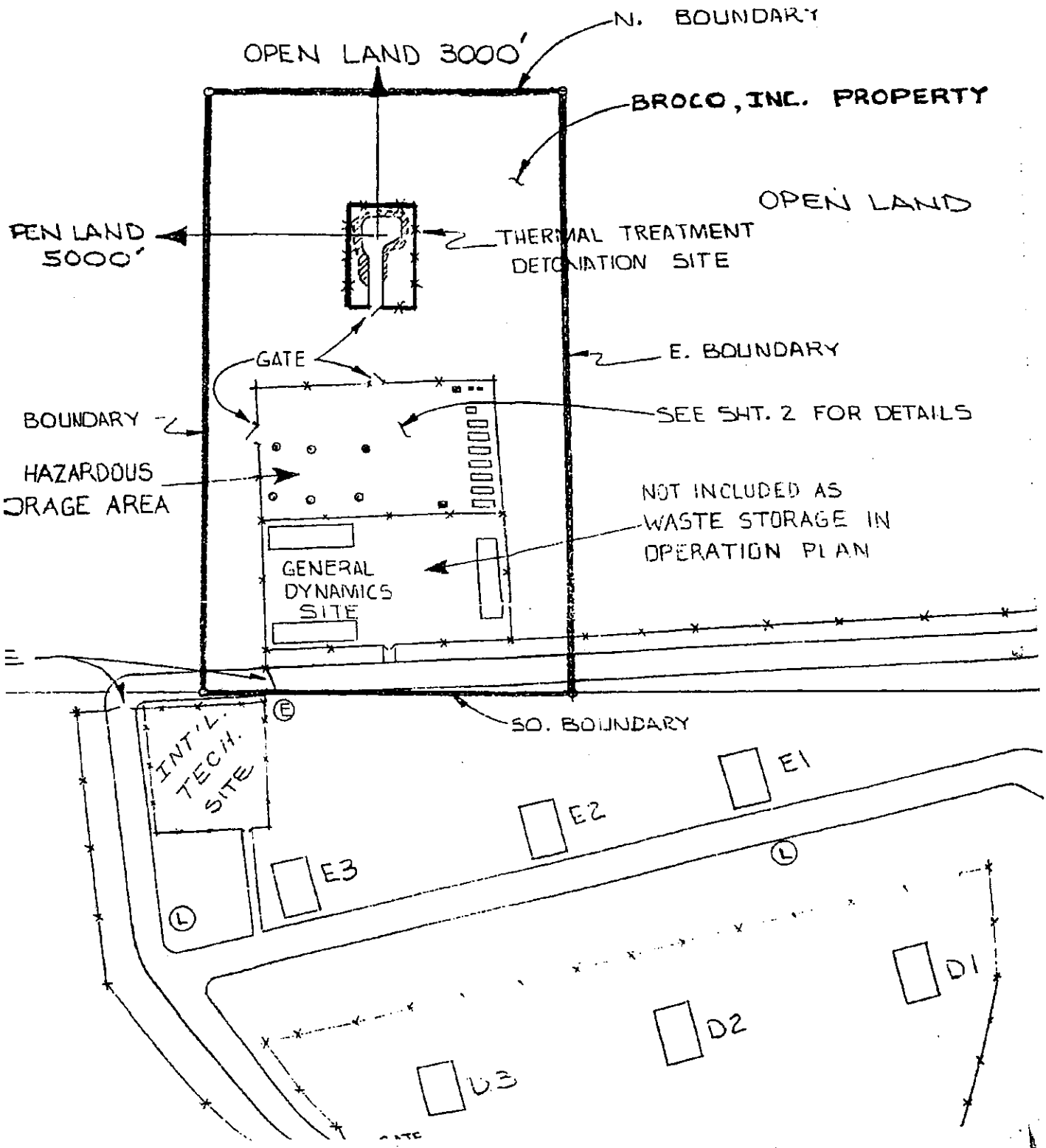
91.8


20 21
29 28
N
RIVERSIDE AVE.
BROCO SITE
AVE
SIERRA AVE.
ALDER AVE.
LOCUST
HIGHLAND AVE.
SAN BERNARDINO (7MI.)
RIALTO MUNICIPAL AIRPORT
RIALTO
FONTANA (8MI.)
KEY PLAN
(NO SCALE)
CALIFORNIA
DEVORE
QUADRANGLE LOCATION
SAN BERNARDINO COUNTY
7.5 MINUTE SERIES (TOPOGR.)
NW/4 SAN BERNARDINO
15° QUADRANGLE
N. 3407.5-W11722.5/7.5


N. BOUNDARY
OPEN LAND 3000'
BROCO, INC. PROPERTY
OPEN LAND
PEN LAND
5000'
THERMAL TREATMENT
DETONATION SITE
GATE
E. BOUNDARY
BOUNDARY
SEE SHT. 2 FOR DETAILS
HAZARDOUS
ORAGE AREA
NOT INCLUDED AS
WASTE STORAGE IN
OPERATION PLAN
GENERAL
DYNAMICS
SITE
SO. BOUNDARY
INT'L.
TECH.
SITE
E1
E2
E3
D1
D2
D3

ENCLOSURE 8

Description of General Dynamics
(later Hughes and Raytheon)
business and products history
(from internet web site http://www.Janes.com)

Jane's www.janes.com
Jane's INTELLIGENCE REVIEW Jane's DEFENCE WEEKLY
Username:
Password:
Register | F
NOV 1 5 2002
AES 11/15 C
KS 11/18

Home Products Search Intel Centres My Account
Defence | Transport | Aerospace | Security | Business | Regional News
Land Forces | Naval Forces | Air Forces

Quick Search
Advanced Search

Air Forces
News
Products
Defence
FREE Email Alerts
News Briefs on your PDA
FastTrack to Defence Industry
Defence Interviews
Defence Glossary
Picture Gallery
Defence Exhibitions
Jane's Defence Discovery
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Land-Based Air Defence

13 October 2000

Raytheon Electronic Systems FIM-92 Stinger low-altitude surface-to-air missile system family

Development

In May 1992, the then Hughes Aircraft Company and General Dynamics Corporation announced that Hughes had agreed to acquire General Dynamics' missile business.

This acquisition included General Dynamics' then Air Defense Systems Division whose primary manufacturing facilities were in Pomona and Rancho Cucamonga, California. The unmanned strike systems portion of the Convair Divisions' primary plants were in San Diego and Sycamore Canyon, California.

In September 1992, Hughes Missile Systems Company announced that it was consolidating missile manufacturing activities from several locations into its plant in Tucson, Arizona. This meant the end of major production lines in San Diego, Pomona and Rancho Cucamonga, California and Camden, Arkansas. The consolidations were completed by 1994. In early 1998 Hughes Missile Systems was taken over by Raytheon and the company is now known as Raytheon Electronic Systems.

General Dynamics' FIM-43A Redeye system achieved its initial operational capability in 1967. Even as it did so, a joint work programme between the US Army and the General Dynamics Pomona Division was in the second year of studying new design concepts and initiating the testing of components for a Redeye II weapon system with an all-aspects target engagement capability.

This Advanced Seeker Development Programme (ASDP) eventually gave rise, in 1972, to the second-generation man-portable XFIM-92A Stinger design with a more sensitive seeker head and a better kinematic performance, compared to its predecessor, with the addition of a forward aspect engagement capability to its flight envelope and an integral IFF system. However, the first guided tests in 1974 at the White Sands

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for the US Army. Additional rounds are being procured for foreign military sales and the other US armed forces.
Raytheon Electronic Systems continues production of the Stinger-RMP at its Tucson facility at over 1,000 missiles a year.
Before General Dynamics' production of the Stinger-RMP, on 2 September 1987, the US Army MICOM selected the then Raytheon Missile Systems Division as the second source contractor for production of this version. The initial US$24.6 million contract was for 400 Stingers with a US$54.4 million option for an additional 1,500 missiles which was exercised in 1989. Raytheon was allowed to compete with the Hughes-acquired General Dynamics from 1990 onwards for the annual production contracts. This was done in order to keep the overall acquisition costs down for the US armed services. Raytheon was declared qualified for bidding purposes for the FY91 contract bid. In April 1990, Raytheon received a US$45.1 million contract to produce 1,383 missiles. In the following year General Dynamics reverted to the sole source supplier. The US Army requirement was for 29,108 FIM-92C Stinger-RMP rounds with last funding for procurement being provided in FY92.
In FY92, an upgrade contract was placed to improve the FIM-92A/B/C performance against the latest countermeasures. Known as the FIM-92D Block 1 rounds, modifications were made to the RMP software to see its low-signature targets such as UAVs, cruise missiles and light helicopters in even more cluttered countermeasures environments. A ring-laser gyro roll sensor and a lithium battery are also fitted. First production deliveries were made of the Stinger Block 1 rounds in 1995. The programme will involve upgrading all the remaining FIM-92A and FIM-92B missiles in the inventory to the standard of FIM-92D, involving up to 8,500 rounds plus; it will be finished by FY99. The Stinger Block 1 is also made by the European Stinger Project Group which switched production to this version. Stinger Block 1 is in production as new build and retrofit. Block 1 missiles are deployed with front echelon Bradley Linebacker, Avenger and aviation units as a helicopter air-to-air missile.
In mid-2000, Italy chose the Stinger Block 1 to arm its A129 Mangusta attack helicopter.
Plans are also under way to develop and produce Advanced Stinger (Block 2) from the year 2001 onwards. The Block 2 is an evolutionary technology insertion which will provide for the replacement of the current FIM-92D seeker with an advanced technology Focal Plane Array (FPA) imaging IR seeker, known as the Small Diameter Imaging Seeker (SDIS), to increase the detection range. A total of up to 5,000 missiles would be retrofitted for use in both the forward air defence and air-to-air role against helicopters in clutter, unmanned aerial vehicles, cruise missiles and stealthy modern fixed-wing aircraft.
The European Stinger-RMP Production Programme is covered earlier in this section (qv) under International projects.
In German service it is known as the Fliegerfaust-2 (FLF-2) and is deployed with the army, navy and air force. A series of launch platforms was developed by a subsidiary of Daimler-Benz Aerospace for use on ships, wheeled and tracked vehicles.
Both Germany and the Netherlands have also under-taken trials on their man-portable Stinger systems with an early warning radar system to enhance its performance. The Royal Netherlands Army used the Hollandse Signaalapparaten Radar Equipment Providing Omnidirectional Reporting of Targets at

AN/TPX-50 (Mk XII) IFF systems, held in the ADA headquarters radar platoon, which transmit target position data to the TADDS by radio link. Increasingly, however, the FAARs are being used without TADDS and the Stinger teams are being cued on to a target by a voice communication VHF radio link direct to the radar operator.

The Ground-Based Sensors (GBS) are replacing the older FAARs in the division air defence alerting radar role. The GBS is a pulse Doppler, 3-D phased array X-band radar that provides low-altitude target data at altitudes from 0 to 4,000 m and at ranges of up to 40 km. It can automatically detect, track, classify, identify and report a target in 360º azimuth coverage.

In the US Marine Corps the Stinger system is assigned to the Low-Altitude Air Defence (LAAD) battalions which have two firing batteries each of three platoons. A platoon has three sections each of five Stinger teams that are each equipped with an HMMWV light vehicle and four Stinger missiles.

A Marine Expeditionary Force (MEF) is assigned a fully automated Tactical Air Command centre, two Tactical Air Operations Centres, a Light Anti-Aircraft Missile (LAAM) battalion and a complete LAAD battalion (of 90 Stinger teams).

A Marine Expeditionary Brigade (MEB) is assigned a Tactical Air Command Centre, a Tactical Air Operations Centre, an LAAM battalion and an LAAD battery (equating to four I-HAWK batteries and 45 Stinger teams), whilst a Marine Expeditionary Unit (MEU) has a single LAAD platoon (of 15 Stinger teams) attached.

The US Navy uses Stinger teams to supplement warship and support vessel close-range air defences in high-threat areas. A team of two is normally employed with the gunner located within a circular pedestal-type open mount. The other team member acts as a target locator using information sent over the vessel's internal communications net. Stinger is also the principal air weapon on the US Navy's fleet of special operations patrol boats.

In 1991-92 the US Army deployed the Bradley SHORAD vehicle to replace Vulcan self-propelled guns in its Heavy Mechanised Divisions (see section later in this entry). This was followed by the M6 Linebacker vehicle (see entry in Self-propelled surface-to-air missile section).

To date, Stinger is integrated or deployed on over 20 vehicle and helicopter platforms in 19 countries and over 40 services. During the 1999 Kashmir conflict between India and Pakistan, a US-made Stinger was credited with downing one of the three Indian aircraft lost in combat operations.

Stinger weapon systems in Operations Desert Storm and Desert Shield

During the 1991 Gulf War, Stinger systems were deployed extensively by a number of the Coalition forces but, as far as is known, did not engage any Iraqi targets. Post-war debriefing of Iraqi command staff credited Stinger with deterring the use of the 500-strong Iraqi fleet of helicopters that included numerous Hind gunships.

The then latest version of the Stinger - Stinger-RMP equipped with the latest MOD IV software - was deployed with at least three of the four US armed services in support of the Gulf operations. Basic Stinger and export variant Stinger-RMP systems were also deployed with the armed forces of several of

guidance assembly which converts it into guidance signal format for the control electronics. This module then commands the two movable (of four) forward control surfaces to manoeuvre the weapon on to the required intercept course. The control concept used is known as the single channel rolling airframe type and, as such, considerably reduces both the missile weight and manufacturing costs. As the weapon nears its target, the seeker head activates its Target Adaptive Guidance (TAG) circuit within one second of impact to modify its trajectory away from the exhaust plume towards the critical area of the IR target itself. The fuzing system allows for both contact activation as well as missile self-destruction after 20 seconds of flight time following the launch. The Picatinny Arsenal warhead carried has a smooth fragmentation casing to ensure that the desired blast/fragmentation effect is achieved.

A typical tactical engagement follows this sequence of events. Once alerted to a target the gunner shoulders the system, inserts the BCU into its grip-stock receptacle and unfolds the IFF antenna. They then remove the front protective cover of the launcher tube to reveal the IR or IR/UV transparent frangible disc, raise the open sight assembly and connect their beltpack IFF interrogator unit via a cable to the grip-stock. The gunner is now ready to acquire the target visually. They do this by using the sight and estimating its range with the estimation facility of the system. If required, they now interrogate the target using the AN/PPX-1 system. This can be done by the gunner without having to activate the weapon. The azimuth coverage of the 10 km range IFF system is essentially the same as that of the optical sight enabling the gunner to associate responses with the particular aircraft that is in view. An audio signal 0.7 second after the IFF challenge switch is depressed provides the gunner with the cue as to whether the target is friendly or an unknown for possible engagement.

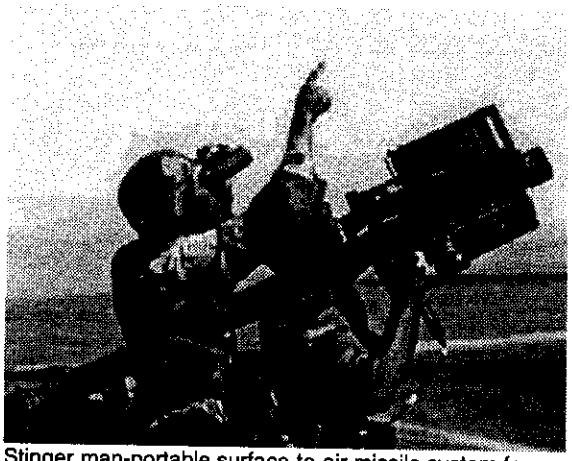
If they decide that it is unfriendly they continue to track the aircraft and activate the weapon system by depressing the impulse generator switch. This causes the impulse generator to energise the BCU which then releases its 6,000 PSI pressurised argon gas coolant to the IR detector and generates a dual-polarity ±20 V DC output for at least 45 seconds. The cooling takes 3-5 seconds. It provides all the prelaunch electrical power required for the seeker coolant system, gyro spin-up, launcher acquisition electronics, guidance electronics, activation of the missile's onboard thermal battery and ignition of the ejector motor.

The seeker is allowed to look at the target through the IR or IR/UV transparent front launcher disc and, when sufficient energy is received by the detector for acquisition to have occurred, an audio signal is sent to the gunner. Total time required for tracking and missile activation is about 6 seconds. They then depress the seeker uncage bar and, using the open sight, insert the superelevation and lead data.

The newer versions of Stinger (Block 1 and Block 2) preclude the need to superelevate the missile.

Once this is accomplished, the gunner depresses the firing trigger which activates the missile battery. This powers all the missile functions after launch and operates for around 19 seconds until the dual-polarity ±20 V DC output drops below the required minimum for use. A brief time delay operates, following which the umbilical connector to the grip-stock is retracted and

Min effective range: 200 m
Max altitude:
(FIM-92A) 3,500 m
(FIM-92B/C) 3,800 m
Min altitude: effectively ground level
Launcher: man-portable single-round disposable with reusable grip-stock



Stinger man-portable surface-to-air missile system from the rear (US Army)

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