



**Investigation of August 1984 Fire  
Lease OCS-G 2254, East Cameron Block 322  
Gulf of Mexico,  
Off The Louisiana Coast**

**SCANNED**

Investigation of August 1984 Fire  
Lease OCS-G 2254, East Cameron Block 322  
Gulf of Mexico,  
Off The Louisiana Coast

November 1985

Prepared by

D. J. Bourgeois  
W. D. Dockery  
C. J. Schoennagel  
D. B. Simpson

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## I. INVESTIGATION AND REPORT

### A. Authority

A serious fire occurred on August 17, 1984, on Aminoil USA's (Aminoil) Platform A, East Cameron Block 322, Lease OCS-G 2254, in the Gulf of Mexico (GOM), offshore the State of Louisiana. Pursuant to Section 208, Subsection 22(d), (e), and (f), of the Outer Continental Shelf (OCS) Lands Act Amendments of 1978, and Department of the Interior Regulation 30 CFR Part 250, the Minerals Management Service (MMS) is required to investigate and prepare a public report of this accident. By memorandum dated August 30, 1984, the following MMS personnel were named to the investigative panel:

D. J. Bourgeois, Metairie, Louisiana  
W. D. Dockery, Reston, Virginia  
C. J. Schoennagel, Metairie, Louisiana  
D. B. Simpson, Lake Charles, Louisiana

### B. Procedures

The investigative panel visited the site of the accident, East Cameron Block 322, Platform A, on September 12, 1984.

It also convened meetings to question personnel knowledgeable about the fire. These meetings were held at MMS District Office, Lake Charles, Louisiana, September 13, 1984; MMS District Office, Lafayette, Louisiana, October 11, 1984; and the law office of Thompson, Sellers, and Bundick, Abbeville, Louisiana, November 1, 1984.

The following is a list of the personnel from whom testimony was taken (for complete list of attendees see Appendix, Attachment 1):

Wilfred C. Bourque - Welder - Production Welding, Inc.  
Rodney L. Dubois - Welder - Production Welding, Inc.  
James L. Kimball - Roustabout - Aminoil USA, Inc.  
Danny J. Lemoine - Platform Operator - Aminoil USA, Inc.  
Lee J. Romero - Senior Construction Foreman - Aminoil USA, Inc.

## II. INTRODUCTION

### A. Background

Lease OCS-G 2254 covers about 5,000 acres and is located in East Cameron Block 322, Gulf of Mexico, off the western Louisiana coast (for lease location see Appendix, Attachment 2). The lease was issued effective February 1, 1973, for a cash bonus of \$28,808,209.30 with a 1/6 fixed royalty rate. The original lessees were as follows:

Burmah Oil Development, Inc. - 50 percent  
Mesa Petroleum Company - 50 percent

Burmah Oil was designated as operator of the lease effective with its issuance. Effective July 1, 1976, Burmah Oil's name was changed to Aminoil Development, Inc. On January 1, 1982, Aminoil Development, Inc., was merged into Aminoil U.S.A., Inc., which subsequently was merged into Phillips Petroleum on January 1, 1985. Presently the lessees are as follows:

Phillips Petroleum - 48 percent  
Mesa Petroleum Company - 52 percent

Five exploratory wells have been drilled on this lease. By application dated February 21, 1974, Aminoil (Burmah) requested approval to install an 8-pile, 18-slot platform in East Cameron Block 322. On February 27, 1974, the District Supervisor for the Texas District granted approval for design and plan of installation for Platform A (for platform location, see Appendix, Attachment 3).

Development drilling operations commenced from Platform A on June 1, 1974. Thirteen development wells were drilled and completed on this lease and Lease OCS-G 2255, East Cameron Block 323, from Platform A (for exploratory and development well locations, see Appendix, Attachment 3). In October 1975, wells drilled and completed from Platform A were placed on continuous production.

The last annual inspection of Platform A (that took place before the fire) was completed by an MMS petroleum engineering technician on October 4, 1983. The following violations of MMS regulatory requirements were issued as a result of this inspection:

1. Incident of Noncompliance (INC) P-930 was issued September 29, 1983, requiring that handrails and grating in various areas of the platform be replaced and repaired. The enforcement action for this INC was a warning, and the INC was corrected by October 6, 1983.
2. INC P-928 was issued September 29, 1983, because the surface safety valve on Well A-13D failed to close when the emergency shutdown system (ESD) was activated. The enforcement action for this INC was a warning, and the INC was corrected on the same day.
3. INC P-126 was issued October 4, 1983, because the junction boxes on the lease automatic custody transfer system and compressor no. 2 were missing caps. The enforcement action for this INC was a shut in, and the INC was corrected immediately.

At the time of the accident, there were 2 gas-producing and 11 oil-producing completions from Leases OCS-G 2254 and OCS-G 2255, East Cameron Blocks 322 and 323, respectively, on the platform. Daily production rates averaged approximately 950 barrels of oil, 3,100 barrels of water, and 1,650,000 cubic feet of gas.

B. Description of Incident

On August 16, 1984, four welders, Messrs. Ronald Babineaux, Wilfred C. Bourque, Rodney L. Dubois, and Jed A. Lange, employees of Production Welders, Inc., arrived on Platform A, East Cameron Block 322, Lease OCS-G 2254. Production Welders was contracted by Aminoil to remove the old, unserviceable grating and handrails in a raised section of the platform around the wellheads and to replace it with new material and handrails.

In addition to the cutting and welding work to be done, sandblasters and painters were conducting general maintenance operations on the platform. The daily work schedule for these various activities called for the sandblasters and painters to work from 6 a.m. to 6 p.m. and the welders to work from 6 p.m. to 6 a.m. From 6 a.m. to 6 p.m. the wells on the platform were allowed to produce but were shut in prior to the welders starting to work.

At about 6 p.m. on August 16, 1984, the welders started removing the grating in the wellhead area and continued doing this through the night. On August 17, 1984, at about 6:30 p.m., the welders returned to the wellhead area to complete the removal of the grating. This was accomplished at approximately 11 p.m., August 17, 1984.

At approximately 11:15 p.m., August 17, 1984, as the welders just started to remove the handrails, a fire ignited in the southeast corner of the wellhead area, completely engulfing the area. Personnel who were in the wellhead area at the time of the fire immediately started both notifying other personnel aboard the platform, some of who were sleeping, and using fire fighting equipment to extinguish the blaze. By approximately 11:45 p.m. the fire was brought under control.

Mr. Jed Lange, who was caught in the middle of the fire and apparently tried to escape, was found among the wellheads a short distance from where he was working when the fire ignited. After initial examination by personnel present, it was presumed that Mr. Lange was fatally injured. Mr. Rodney Dubois received burns to several parts of his body. One of the employees of American Offshore Painters (AOP), Mr. Armond LeBlanc, received minor injuries attempting to make his way to the escape capsule.

Three of the welders, Messrs. Babineaux, Bourque, and Dubois, the injured AOP man, Mr. LeBlanc, and Aminoil employee Mr. Alvin Lemaire were taken to Lafayette General Hospital on the first available helicopter. Mr. Lange's body was transported to Lafayette General Hospital on the next available helicopter.

### III. FINDINGS

#### A. Preliminary Activities

On August 16, 1984, before the welders began cutting operations in the wellhead area, the following precautionary measures were taken: a safety meeting was held between Aminoil and Production Welders personnel; all wells capable of producing hydrocarbons were shut in at the surface safety valve; gas compressors were shut down; lines and manifolds were bled down; a slop tank was pumped out and blocked in; a wellhead flange and a gas line shutdown valve suspected of leaking were repaired; pressure-sensing devices were covered with a tarpaulin; the wellhead area was surveyed with a portable gas detector for the presence of combustible gases; the wellhead deck was wetted down; a fire hose was left unreeled in the wellhead area; and a fire watch was designated for the welders. Following these precautionary measures, a hotwork permit was issued authorizing the cutting away of the unserviceable grating in the wellhead area with a torch (for a copy of the permit, see Appendix, Attachment 4). This permit was issued for the period beginning at 6:00 p.m. on August 16 and ending at 6:00 a.m. on August 17, 1984. The work was apparently discussed but not described on the hotwork permit form.

At approximately 6:00 a.m. on August 17, 1984, the welders ceased cutting operations, the wells were brought back on production, and the sandblasters and painters continued their maintenance work on the platform.

Before the welders began work in the wellhead area on August 17, 1984, the sandblasting and painting crews ceased their operations, and similar precautionary measures, except for the repair of the leaking equipment, were again taken. However, on this day, the wells were shut in at both the subsurface and surface safety valves. Again, a hot-work permit was issued authorizing the work to be done by the welders beginning at

6 p.m. on August 17, 1984, and ending at 6 a.m. on August 18, 1984, (for a copy of the permit, see Appendix, Attachment 4).

Work to cut away the remainder of the unserviceable grating in the wellhead area commenced around 6:30 p.m. on August 17, 1984. Once again, the permit did not include a description of the work to be done.

At about 11 p.m. the welders finished removing the grating in the wellhead area. At that time Mr. Lee J. Romero, an Aminoil Construction foreman, held a meeting with the welders to discuss the removal of the handrails from the raised section around the wellheads. It was decided that the four welders would work in pairs to remove the handrails since the weight and general configuration of the material would prohibit this being done safely by an individual working alone. The welders paired off with Messrs. Babiniaux and Bourque to start in the northeast corner of the wellhead area and Messrs. Dubois and Lange in the southeast corner.

#### B. Presence of Combustible Substance

In the issuance of the hotwork permits on August 16 and 17, 1984, to conduct cutting operations in the wellhead area, Aminoil personnel were to follow the procedures outlined in their "Safe Welding and Burning Plan" (for plan procedures, see Appendix, Attachment 5). This plan, approved by the Minerals Management Service, describes the precautionary measures that should be taken to prevent the presence and/or ignition of combustible substances. The plan provides that combustible substances should be moved clear of the operations, and that those that cannot be moved should be protected against sparks and slag.

A small tank was located in the southeast corner of the wellhead area near a firewall and under the grating around the wellheads (for photographs of destroyed tank, see Appendix, Attachment 6). This approximately 120-gallon, rectangular tank was equipped with a sight glass, threaded drain plug on the underneath side, a threaded fill pipe on top side, and a threaded fill pipe cap with a vent hole and vacuum relief port (for photograph of similar tank, see Appendix, Attachment 7). Another outlet on the tank was connected to a pump to inject the contents of the vessel into the production stream at the header system. The small tank, which at the time of the fire contained an emulsion-breaker chemical, was unlabeled as to the identity or flammability of its contents.

On Platform A, this chemical is stored in a bulk storage vessel, which at the time of the accident, was located on an upper deck from the wellhead area (for photograph of vessel, see Appendix, Attachment 7). It had been placed on top of a portable galley that was temporarily on the platform to accommodate the sandblasting, painting, and welding crews. The bulk storage vessel apparently complied with the U.S. Department of Transportation regulations concerning a hazardous substance transport vessel and was labeled with a decal which read "Flammable." The chemical was transferred from the bulk storage vessel to the small tank in the wellhead area by means of gravity feed through a portable, flexible hose.

The chemical contained in both vessels was a liquid nonionic surfactant emulsion-breaker mixed with methanol and naptha solvents. It has a flash point estimated at 70 to 75 degrees Fahrenheit (°F), and about 63 percent of the liquid volume contains materials volatile at 220°F. This chemical is classified as a flammable liquid by both the U.S. Department of Transportation and the U.S. Occupational Safety and Health Administration (for chemical analysis reports, see Appendix, Attachment 8).

During the course of taking precautionary measures prior to the issuance of the hotwork permits on August 16 and 17, 1984, the small tank was apparently surveyed with a portable gas detector for the presence of combustible gases. However, no actions were taken to drain and inert the space inside the tank, or to cover, shield, or move it from the cutting operations. The presence of the small tank and its contents were discussed at the safety meeting held between Aminoil and Production Welders personnel, but it was not considered a hazard, and no added precautions were taken. The fact that welding and cutting operations had previously been conducted in the vicinity of the small tank resulted in Aminoil personnel being of the opinion that the contents of the tank posed no hazard to these types of operations.

C. Fire

At approximately 11:15 p.m. a fire ignited, completely engulfing the southeast corner of the wellhead area. Mr. Lange was making his initial cutting on the handrails just above the small tank containing the emulsion-breaker chemical when combustion occurred. Mr. Dubois, who was standing several yards away from Mr. Lange, was observing the operation and had just turned his head when the fire ignited.

Sparks or slag from the cutting operation being performed by Mr. Lange ignited the flammable vapors of the chemical contained in the small tank. It is impossible to ascertain the exact mechanism by which the ignition source met with the flammable substance.

The fire spread out in a roughly quadrant-shaped area with about a 20-foot radius in westerly and northerly directions away from the small tank. No fuels, gases, or materials other than the emulsion-breaker chemical made any significant contribution to the fire.

D. Emergency Notification and Fire Fighting

The platform was equipped with an automatic audible fire alarm and annunciator system activated by fire-sensing elements in the wellhead area. The platform was also equipped with a manual type of audible fire alarm. The automatic fire alarm system and the ESD, which shuts in the entire production system including the wells at the sub-surface safety valves, were integrated together in a common system. The ESD system had been activated prior to the fire, effectively bleeding down the air pressure in all control lines around the platform. Since the two systems were tied together, the automatic fire alarm system did not activate when the fire occurred. The manual fire alarm system was not activated, but personnel working in the wellhead area used the communications system to alert all personnel on the platform that a fire had occurred. Personnel not initially alerted were notified by word of mouth as people responded to the fire.

When the fire ignited, personnel in the wellhead area started fire fighting efforts as soon as equipment could be reached and activated. The fire was extinguished by Aminoil personnel in about 30 minutes with the use of water hoses, a fire boss, and dry chemicals.

At the time the fire ignited, the two Aminoil personnel who had been designated as fire watch for the welders were not in the wellhead area. They had assumed that the welders were going to break for dinner before they started to remove the handrails and, therefore, had gone to the galley. These two Aminoil employees who had alternated as the fire watch were also the platform night crew and periodically left the welders without a fire watch as they took care of other duties.



E. Fatality and Damage

The fire resulted in the fatality of Mr. Jed Lange, a welder employed by Production Welders, Inc., of Abbeville, Louisiana. Mr. Rodney Dubois, also an employee of Production Welders, received burns to his left arm, left hand, and face (for copy of Aminoil Report, see Appendix, Attachment 9). Mr. Dubois was taken by helicopter to Lafayette General Hospital in the early morning hours on August 18, 1984, where he was treated and released on that day.

The small tank and its associated equipment were completely destroyed. Several other pieces of production equipment and some fire fighting equipment were also damaged in the fire.

Evacuation of all personnel on the platform was not necessary, and there was no pollution as a result of this fire.

IV. CONCLUSIONS

A. Probable Cause of Incident

The act of conducting flame-cutting operations close to an unshielded tank containing a flammable liquid was the probable cause of the fire.

B. Possible Causes of Ignition

The following are possible causes of ignition:

1. Molten steel deposited on the tank burned a hole through the aluminum top and dropped inside.
2. Molten steel deposited on the tank transferred heat through the aluminum to raise the temperature inside the tank to the ignition temperature.
3. Sparks entered the tank through the open filler-pipe from which the cap may have been inadvertently left off.
4. Sparks ignited vapors rising through the open filler-pipe.

C. Probable Cause of Fatality

Injuries sustained in the fire caused the fatality of Mr. Jed Lange.

D. Contributing Causes of Incident

The following causes contributed to the incident:

1. Lack of adherence by Aminoil personnel with the procedures contained in Aminoil's "Safe Welding and Burning Plan" during the issuance of hotwork permits on August 16 and 17, 1984.
2. Lack of knowledge by Aminoil personnel of the flammability of the emulsion-breaker chemical.
3. Absence of any type of flammable markings on the small chemical tank located in the wellhead area.

4. Failure by Aminoil personnel assigned as fire watch to properly carry out the duties and responsibilities of a fire watch while torch-cutting activities were being conducted in the wellhead area.

E. Concerns Developed from Incident

The following concerns developed from the investigation:

1. The failure of the fire alarm to sound when the fire occurred because the ESD system and the automatic fire detection and alarm system were integrated together in a common system. In effect, when the ESD system is activated or down for repairs, the automatic fire detection and alarm system is bled down and deactivated. Therefore, when the ESD system is down, the fire alarm will not automatically sound in the event of a fire.
2. The general lack of communication between Aminoil personnel and contract crews, particularly concerning hazardous conditions that may exist and the appropriate safety procedures that should be taken on an offshore platform.

V. RECOMMENDATIONS

A. Field Surveys

The MMS should conduct a field survey of all platform storage vessels to determine contents, proper markings, and possible hazards associated with the contents and/or location of the vessel. Any hazardous conditions found should be reported to the platform operator with a requirement that MMS be notified of the corrective action taken.

B. Safety Alerts

The GOM Region should issue Safety Alerts concerning the following:

1. All storage vessels containing flammable substances should be properly marked.
2. ESD systems and fire detection and alarm systems should be analyzed to see if they are integrated together. If they are, and if, when one is taken out of service the other is deactivated, then consideration should be given to having the systems powered and activated independently. An alternative could be to install a temporary automatic fire detection and alarm system when the ESD system is to be out of service for any length of time.

C. Improving Aminoil Personnel Safety Training

Aminoil should take action to assure that:

1. All personnel become more aware of safety hazards such as the presence of flammable substances stored in tanks that are located near welding or burning operations.
2. All personnel become more familiar with the procedures outlined in their "Safe Welding and Burning Plan."
3. The platform operator properly instruct all contract personnel concerning both the safety hazards on a platform and the protective measures that should be taken for specific jobs to be performed.

4. All personnel direct proper attention to the issuance of a hotwork permit and adhere to the provisions.
5. Key personnel become totally knowledgeable with the operation of the platform safety systems.

D. Civil Penalty Pursuant to 30 CFR 250.80

Aminoil should be cited for the following apparent violations of the provisions of OCS Order No. 5:

1. Improper maintenance of a fire watch (Sec. 5.4.3.b).
2. Failure to comply with the provisions of their approved "Safe Welding and Burning Plan" prior to issuing the hotwork permits (Sec. 5.4.1).

LIST OF PERSONNEL WHO ATTENDED THE MEETINGS

MMS District Office -- Lake Charles, Louisiana -- September 13, 1984

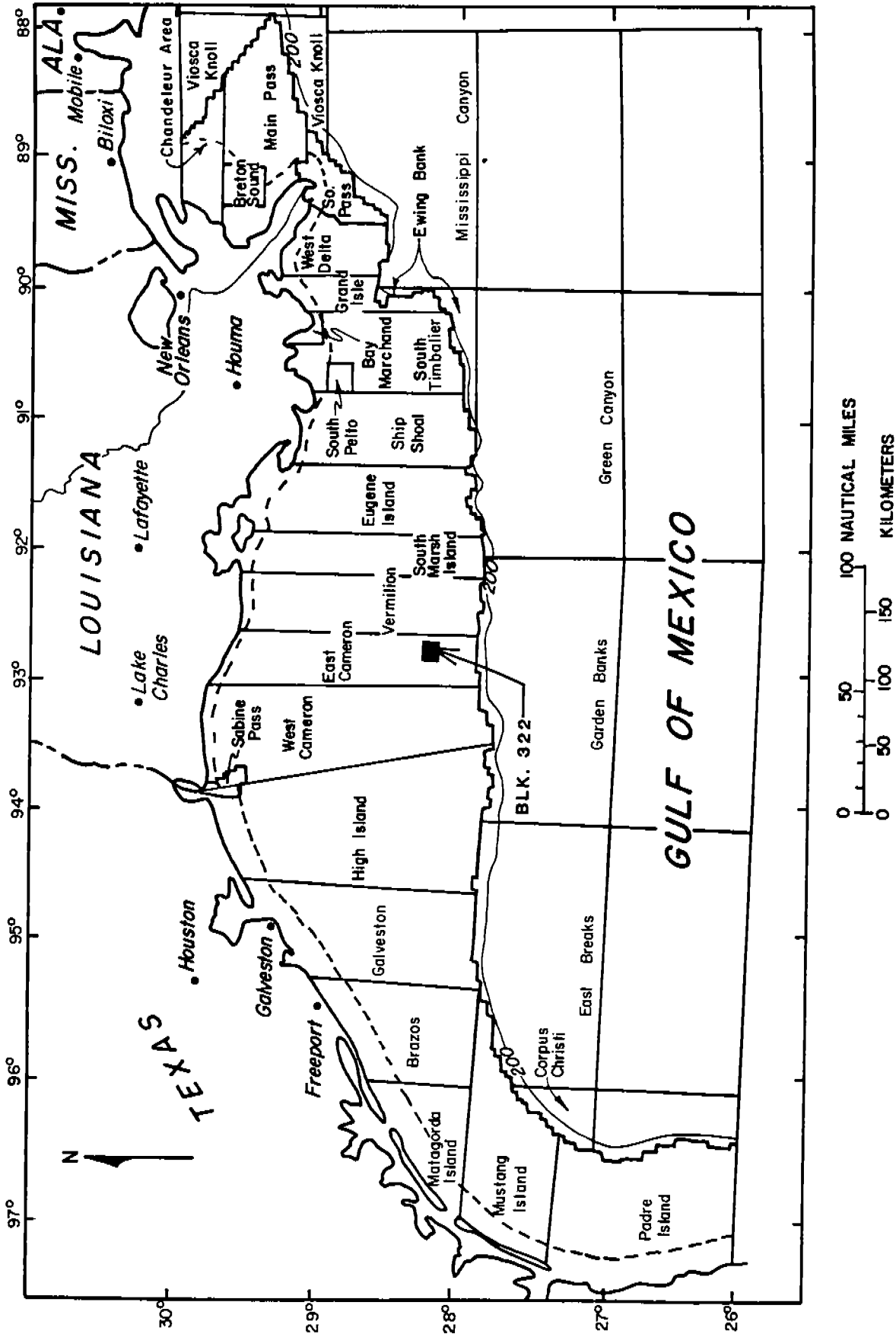
D. J. Bourgeois -- MMS  
W. D. Dockery -- MMS  
C. J. Schoennagel -- MMS  
D. B. Simpson -- MMS  
D. F. Lery -- Aminoil  
D. J. Lemoine -- Aminoil  
K. Moore -- Aminoil  
L. J. Romero -- Aminoil  
L. Simon -- Counsel for Aminoil

MMS District Office -- Lafayette, Louisiana -- October 11, 1984

D. J. Bourgeois -- MMS  
W. D. Dockery -- MMS  
C. J. Schoennagel -- MMS  
D. B. Simpson -- MMS  
W. C. Bourque -- Production Welding, Inc.  
J. R. Joy -- Counsel for W. C. Bourque  
J. L. Kimball -- Aminoil  
D. F. Lery -- Aminoil  
G. B. Jurgens -- Counsel for Aminoil

Law Office of Thompson, Sellers, and Bundick -- Abbeville, Louisiana -- November 1, 1984

D. J. Bourgeois -- MMS  
C. J. Schoennagel -- MMS  
D. B. Simpson -- MMS  
M. Comeaux -- Production Welding, Inc.  
R. L. Dubois -- Production Welding, Inc.  
R. C. Sellers -- Counsel for R. L. Dubois



Location of Lease OCS-G 2254, Gulf of Mexico. Dashed lines indicate boundary between State and Federal waters; solid fine indicates 200-meter water depth.

EAST CAMERON BLOCK 322 & 323  
 LOCATION OF PLATFORM A  
 ON LEASE OCS-G 2254 & OCS-G 2255

AMINOIL G 2254

AMINOIL G 2255

PLATFORM A

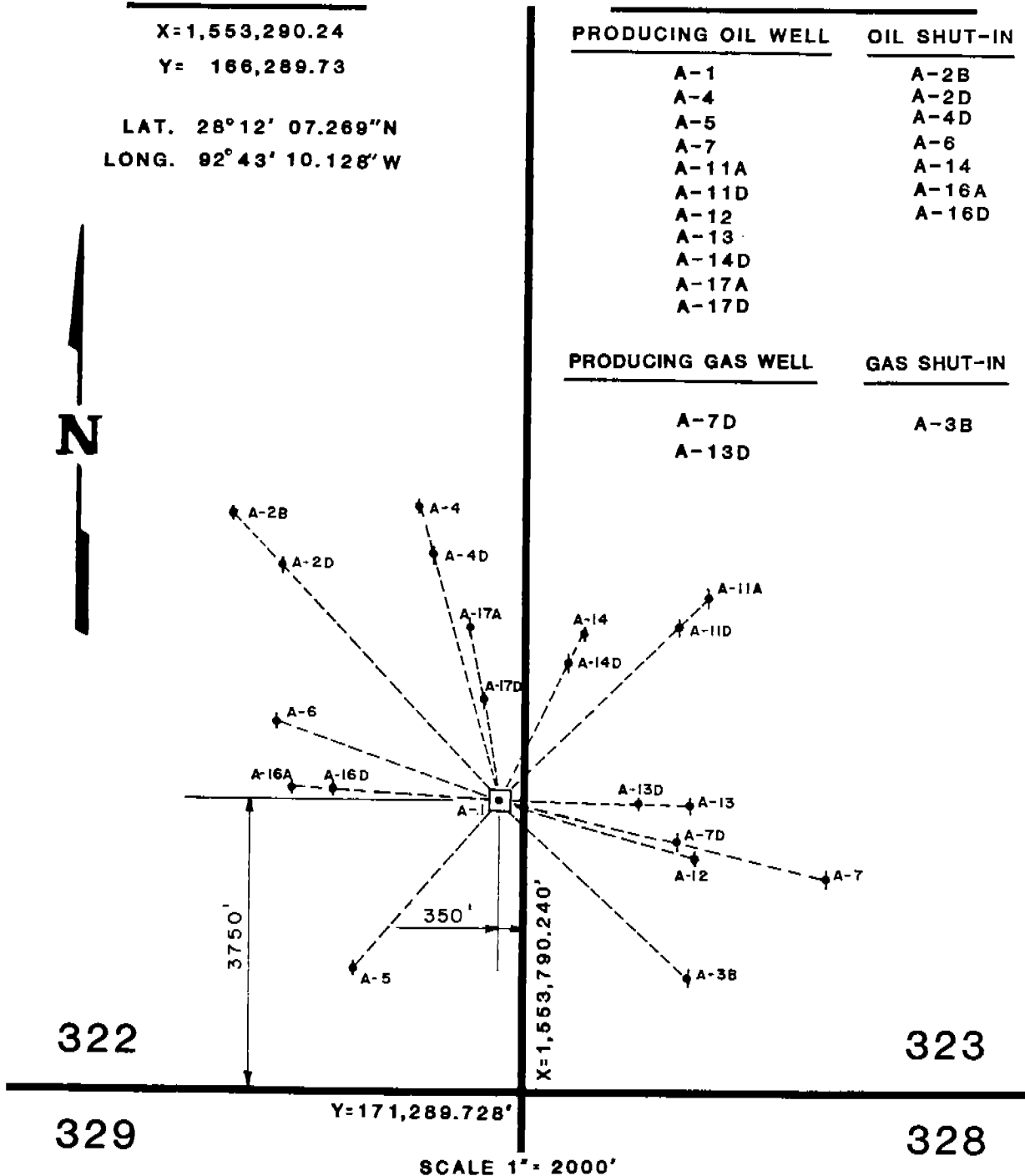
X=1,553,290.24

Y= 166,289.73

LAT. 28°12' 07.269"N  
 LONG. 92°43' 10.128' W

STATUS OF WELLS  
 AT TIME OF ACCIDENT

<u>PRODUCING OIL WELL</u>	<u>OIL SHUT-IN</u>
A-1	A-2B
A-4	A-2D
A-5	A-4D
A-7	A-6
A-11A	A-14
A-11D	A-16A
A-12	A-16D
A-13	
A-14D	
A-17A	
A-17D	
<u>PRODUCING GAS WELL</u>	<u>GAS SHUT-IN</u>
A-7D	A-3B
A-13D	



<b>HOTWORK PERMIT</b> 5241		<b>NOTE:</b> INSERT BOOK COVER FLAP BENEATH THE PINK COPY WHEN WRITING.		<b>FIELD/PLATFORM</b> FC 322	
1	TO BE COMPLETED BY PERSON IN CHARGE WITH WELDER PRESENT CHECK TYPE OF WORK TO BE DONE:			TIME (START)	TIME (STOPPED)
	<input checked="" type="checkbox"/> WELD <input checked="" type="checkbox"/> BURN <input type="checkbox"/> OTHER    DESCRIBE			6:00 AM	6:00 AM
DATE 8-12-84					
2	LOCATION OF WORK TO BE DONE:				
	<input checked="" type="checkbox"/> 1. DESIGNATED SAFE WELDING AND BURNING AREA <input checked="" type="checkbox"/> 2. WELLHEAD OR PRODUCTION AREA <input type="checkbox"/> 3. OTHER AREA, DESCRIBE				
3	HAVE THE FOLLOWING BEEN CHECKED?				
	1. WORK AREA AND EQUIPMENT AREA CHECKED WITH A SNIFFER		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	4. PROVIDE FIREWATCH WHERE REQUIRED
2. PROTECT AREA BELOW FROM FALLING SPARKS		<input type="checkbox"/>	<input type="checkbox"/>	5. HAS FIREWATCH BEEN TRAINED IN USE	
3. CLEAN DRIP PANS AND PLUG DRAINS IN IMMEDIATE AREA		<input checked="" type="checkbox"/>	<input type="checkbox"/>	OF EXTINGUISHERS	
4		THE WELDER'S EQUIPMENT HAS BEEN CHECKED FOR:			
1. DRIP PAN AND SPARK ARRESTOR ON WELDING MACHINE.		5. ARE THE OXYGEN AND ACETYLENE BOTTLES SECURED?			
2. TEST WELDING MACHINE AREA WITH A SNIFFER BEFORE STARTING		6. PRESSURE UP AND CHECK HOSE, FITTINGS, GAUGES AND REGULATORS FOR LEAKS.			
3. ARE THE LEADS IN GOOD CONDITION?		7. INSPECT AND PROVIDE PROTECTION FOR HOSES AND LEADS WHERE REQUIRED.			
4. IS THE GROUND LEAD FIRMLY ATTACHED?					
5 REMARKS:					
6 I HEREBY STATE THAT I HAVE READ AND THAT I AM FAMILIAR WITH THE AMINOIL USA, INC. SAFE PRACTICES AND PROCEDURES PLAN FOR WELDING AND BURNING ON OFFSHORE PLATFORMS AND RIGS, AND N. F. P. A. BULLETIN O. 51-B.					
WELDER (SIGNATURE) <i>Robert D. ...</i>			CERTIFICATION NUMBER 438-66-3779		
PUMPER OR FOREMAN (SIGNATURE) <i>...</i>			DESIGNATED PERSON IN CHARGE (SIGNATURE) <i>...</i>		

<b>HOTWORK PERMIT</b> 5241		<b>NOTE:</b> INSERT BOOK COVER FLAP BENEATH THE PINK COPY WHEN WRITING.		<b>FIELD/PLATFORM</b> FC 322	
1	TO BE COMPLETED BY PERSON IN CHARGE WITH WELDER PRESENT CHECK TYPE OF WORK TO BE DONE:			TIME (START)	TIME (STOPPED)
	<input checked="" type="checkbox"/> WELD <input checked="" type="checkbox"/> BURN <input type="checkbox"/> OTHER    DESCRIBE			6:00 AM	6:00 AM
DATE 8-17-84					
2	LOCATION OF WORK TO BE DONE:				
	<input type="checkbox"/> 1. DESIGNATED SAFE WELDING AND BURNING AREA <input type="checkbox"/> 2. WELLHEAD OR PRODUCTION AREA <input checked="" type="checkbox"/> 3. OTHER AREA, DESCRIBE				
3	HAVE THE FOLLOWING BEEN CHECKED?				
	1. WORK AREA AND EQUIPMENT AREA CHECKED WITH A SNIFFER		YES <input type="checkbox"/>	NO <input type="checkbox"/>	4. PROVIDE FIREWATCH WHERE REQUIRED
2. PROTECT AREA BELOW FROM FALLING SPARKS		<input type="checkbox"/>	<input type="checkbox"/>	5. HAS FIREWATCH BEEN TRAINED IN USE	
3. CLEAN DRIP PANS AND PLUG DRAINS IN IMMEDIATE AREA		<input type="checkbox"/>	<input type="checkbox"/>	OF EXTINGUISHERS	
4		THE WELDER'S EQUIPMENT HAS BEEN CHECKED FOR:			
1. DRIP PAN AND SPARK ARRESTOR ON WELDING MACHINE.		5. ARE THE OXYGEN AND ACETYLENE BOTTLES SECURED?			
2. TEST WELDING MACHINE AREA WITH A SNIFFER BEFORE STARTING		6. PRESSURE UP AND CHECK HOSE, FITTINGS, GAUGES AND REGULATORS FOR LEAKS.			
3. ARE THE LEADS IN GOOD CONDITION?		7. INSPECT AND PROVIDE PROTECTION FOR HOSES AND LEADS WHERE REQUIRED.			
4. IS THE GROUND LEAD FIRMLY ATTACHED?					
5 REMARKS: Wellhead (Total Shut-in)					
6 I HEREBY STATE THAT I HAVE READ AND THAT I AM FAMILIAR WITH THE AMINOIL USA, INC. SAFE PRACTICES AND PROCEDURES PLAN FOR WELDING AND BURNING ON OFFSHORE PLATFORMS AND RIGS, AND N. F. P. A. BULLETIN O. 51-B.					
WELDER (SIGNATURE) <i>Robert D. ...</i>			CERTIFICATION NUMBER 438-66-3779		
PUMPER OR FOREMAN (SIGNATURE) <i>...</i>			DESIGNATED PERSON IN CHARGE (SIGNATURE) <i>...</i>		

AMINOIL USA, INC.  
Gulf Coast District

SAFE PRACTICES AND PROCEDURES PLAN

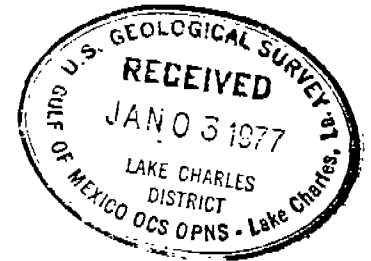
for

WELDING AND BURNING

on

OFFSHORE PLATFORMS AND RIGS

December 15, 1976



SCOPE

This plan shall govern all welding and burning operations on all Aminoil USA, Inc. and/or Aminoil Development, Inc. operated platforms and on all mobil drilling rigs under contract to Aminoil while drilling (or performing workover operations) on Aminoil operated Federal OCS leases in the Gulf of Mexico. For the purposes of this plan "welding and burning" is defined to include Arc or Acetylene cutting and Arc or Acetylene welding.

GENERAL

All welding and burning operations shall be performed in accordance with the provisions of this plan.

When drilling, completion, workover, or wireline operations are in progress welding operations in other than approved safe welding areas may be conducted only if the wells on which work is being done contains non-combustible fluids, and entry of formation hydrocarbons into the wellbore is precluded by a positive overbalance toward the formation.

All production shall be shut in at the Surface Safety Valve while welding or burning in the production area or the wellhead area.

DESIGNATED PERSON-IN-CHARGE

The Aminoil Pumper shall be the person-in-charge of all welding and burning operations on a production platform. The Aminoil Drilling Foreman shall be the person-in-charge of all welding and burning operations on a drilling or workover rig. In the event that simultaneous operations are in progress on a producing platform, then the "person-in-charge" as set forth in the Aminoil Simultaneous Operations Contingency Plan in effect at that time shall be the person-in-charge of welding and burning operations.



RESPONSIBILITIES OF THE PERSON-IN-CHARGE

The person-in-charge shall be familiar with the requirements of this plan and the fire prevention precautions set forth in the NFPA "Standard for Fire Prevention in the Use of Cutting and Welding Processes", Bulletin No. 51B, attached hereto as Appendix I.

The duties of the person-in-charge shall be as follows:

1. Shall inform all workers of the work to be done and any hazard which may exist or could occur during the work. Workers shall be familiar with the alarm and shut-in system and platform fire and abandonment procedures.
  - a. Personally check the welder qualifications.
  - b. Insure that all workers have proper safety equipment.
  - c. Firewatchers shall be instructed in the use of fire-fighting equipment and sounding the fire alarm. Firewatchers shall be instructed to be alert and attentive to the work and reminded that they are responsible for the protection of the welder from unseen dangers and changes in the conditions in the work area.
2. Shall personally inspect the welding and burning equipment and confirm that the location and condition of the equipment is not a fire or pollution hazard.
  - a. Welding machines shall have spark arrestors and drip pans.
  - b. Inspect leads for insulation and condition. Splices in leads shall be insulated.
  - c. Secure Oxygen and Acetylene bottles in safe and protected manner.
  - d. Inspect hoses, fittings, gauges, and regulators for leakfree and proper conditions.
  - e. Inspect routing of hoses and leads from the equipment to the work area. Provide protection to hoses and leads as necessary in areas where they could be cut, crushed, or frayed.
  - f. Inspect welding machine area with a gas sniffer before starting up welding machines.
3. Person-in-charge along with the welders shall personally inspect the work area where welding and burning is to be performed for potential fire and explosion hazards and confirm that the area is safe for welding and burning.

-3-

- a. Combustible materials shall be moved clear of the operation. The deck shall be clean and kept free of combustible material.
- b. Combustible material which cannot be moved clear of the operation or clear of sparks and slag shall be protected.
- c. The welding ground lead shall be securely attached.
- d. Windshields, if required, shall be properly tied down and shall not themselves be a fire hazard.
- e. All drains in the area shall be checked and plugged. The drip pans under vessels shall be cleaned.
- f. No welding shall be done on lines that have contained a flammable substance unless the section of the line to be worked on has been isolated from the system (both upstream and downstream) and has been determined safe.
- g. No welding shall be done on or in containers, vessels, or tanks which have contained a flammable substance, unless they have been rendered inert and determined to be safe for welding, or burning by the District Safety Supervisor.
- h. Firewatchers shall be provided in the work area and in any area unprotected from sparks and slag. Firewatchers shall have no other duties and shall have the proper firefighting equipment in his possession. Firewatchers shall remain on watch for a minimum of 30 minutes after work has stopped.
- i. No hot taps of oil or gas lines shall be made without first obtaining approval of District Production Superintendent, District Construction Engineer, or District Safety Supervisor. Additional approval must also be obtained from U.S.G.S. Area Supervisor, Field Operations.
- j. A gas sniffer test shall be made in the work area and any other area unprotected from sparks and slag before the start of any welding and burning operation. Retests shall be made if conditions change.

4. The person-in-charge shall personally authorize the start and limits of the welding and burning operation by completely filling in and signing a copy of the Aminoil Hot Sheet attached hereto as Exhibit A. The work shall not be authorized until the person-in-charge is satisfied that the work can be performed safely. Questions or conditions not covered by this plan shall be directed to the District Safety Supervisor.

#### WELDER QUALIFICATIONS

Aminoil requires, prior to the initiation of the work, proof of certification for all welders that are to be used in the work as set out below. Such certification shall be current (most recent tests not over one year old) and shall completely describe the type of test completed. Proof of certification shall be in the possession of the welder and shall be shown to the person-in-charge upon arrival at the offshore location.

1. Structural Welding and Drive Pipe Welding - All welders welding on structural steel and drive pipe shall be qualified in accordance with Section 5 of the American Welding Society Code, AWS D1.1 in the 2G and 5G position or the 6G position.
2. Pressure Piping - All welders welding on pressure piping on the platform shall be qualified in accordance with provisions of ANSI B 31. Welders working on pipelines downstream of the pig launcher shall be qualified in accordance with the provisions of API 1104.

AMINOIL USA, INC.  
SAFE PRACTICES AND PROCEDURES PLAN  
FOR  
WELDING AND BURNING

EXHIBIT A

<b>HOTWORK PERMIT</b> NOTE: THIS IS NCR PAPER "NO CARBON REQUIRED" INSERT BOOK COVER FLAP BENEATH THE PINK COPY WHEN WRITING.	FIELD/PLATFORM  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">TIME (START)</td> <td style="width: 33%;">TIME (STOPPED)</td> <td style="width: 33%;">DATE</td> </tr> <tr> <td style="text-align: center;">AM PM</td> <td style="text-align: center;">AM PM</td> <td></td> </tr> </table>	TIME (START)	TIME (STOPPED)	DATE	AM PM	AM PM															
TIME (START)	TIME (STOPPED)	DATE																			
AM PM	AM PM																				
TO BE COMPLETED BY PERSON IN CHARGE WITH WELDER PRESENT CHECK TYPE OF WORK TO BE DONE:																					
<input type="checkbox"/> WELD <input type="checkbox"/> BURN <input type="checkbox"/> OTHER	DESCRIBE																				
LOCATION OF WORK TO BE DONE:																					
<input type="checkbox"/> 1. DESIGNATED SAFE WELDING AND BURNING AREA	<input type="checkbox"/> 2. WELLHEAD OR PRODUCTION AREA																				
<input type="checkbox"/> 3. OTHER AREA, DESCRIBE																					
HAVE THE FOLLOWING BEEN CHECKED?																					
1. WORK AREA AND EQUIPMENT AREA CHECKED WITH A SNIFFER PROTECT AREA BELOW FROM FALLING SPARKS CLEAN DRIP PANS AND PLUG DRAINS IN IMMEDIATE AREA	<table style="width: 100%;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> <td style="width: 20%;"></td> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>4. PROVIDE FIREWATCH WHERE REQUIRED</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>5. HAS FIREWATCH BEEN TRAINED IN USE OF EXTINGUISHERS</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	YES	NO		YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	4. PROVIDE FIREWATCH WHERE REQUIRED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. HAS FIREWATCH BEEN TRAINED IN USE OF EXTINGUISHERS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
YES	NO		YES	NO																	
<input type="checkbox"/>	<input type="checkbox"/>	4. PROVIDE FIREWATCH WHERE REQUIRED	<input type="checkbox"/>	<input type="checkbox"/>																	
<input type="checkbox"/>	<input type="checkbox"/>	5. HAS FIREWATCH BEEN TRAINED IN USE OF EXTINGUISHERS	<input type="checkbox"/>	<input type="checkbox"/>																	
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>																	
THE WELDER'S EQUIPMENT HAS BEEN CHECKED FOR:																					
1. DRIP PAN AND SPARK ARRESTOR ON WELDING MACHINE. 2. TEST WELDING MACHINE AREA WITH A SNIFFER BEFORE STARTING 3. ARE THE LEADS IN GOOD CONDITION? IS THE GROUND LEAD FIRMLY ATTACHED?	5. ARE THE OXYGEN AND ACETYLENE BOTTLES SECURED? 6. PRESSURE UP AND CHECK HOSE, FITTINGS, GAUGES AND REGULATORS FOR LEAKS. 7. INSPECT AND PROVIDE PROTECTION FOR HOSES AND LEADS WHERE REQUIRED.																				
REMARKS:																					
I HEREBY STATE THAT I HAVE READ AND THAT I AM FAMILIAR WITH THE AMINOIL USA, INC. SAFE PRACTICES AND PROCEDURES PLAN FOR WELDING AND BURNING ON OFFSHORE PLATFORMS AND RIGS, AND N. F. P. A. BULLETIN NO. 51-B.																					
WELDER (SIGNATURE)	CERTIFICATION NUMBER																				
PUMPER OR FOREMAN (SIGNATURE)	DESIGNATED PERSON IN CHARGE (SIGNATURE)																				

APPENDIX I

BEST AVAILABLE COPY

AMINOIL USA, INC.  
Gulf Coast District

SAFE PRACTICES AND PROCEDURES PLAN

for

WELDING AND BURNING

on

OFFSHORE PLATFORMS AND RIGS

**Foreword**

Cutting and welding processes using electric arcs or oxy-fuel gas flames are a necessary part of our industrial world. Too often, however, the persons who use, hire, or supervise the use of these processes do not fully appreciate that their improper use can result in loss of life and property by fire and explosion.

Approximately 6 per cent of fires in industrial properties have been caused by cutting and welding, primarily with portable equipment in areas not specifically designed or approved for such work. Cutting and welding operations produce literally thousands of ignition sources in the form of sparks and hot slag. The electric arc or the oxy-fuel gas flame and the hot work pieces are also inherent ignition sources.

A majority of industrial fires in which cutting and welding is a factor have been caused by sparks. These globules of molten metal have scattered as far as 35 feet, setting fire to all kinds of combustible materials. They have also fallen through cracks, pipe holes or other small openings in floors and partitions starting fires which have reached serious proportions before being noticed.

Electric arcs or oxy-fuel gas flames, in themselves, have rarely caused fire except where they have overheated combustibles in the vicinity of the work or where they have been used on containers that had not been purged of flammable materials. In the latter case, an explosion generally resulted.

The heat of the metal being welded or cut has caused fires where the hot pieces were permitted to rest or fall upon combustible materials. Fires and explosions have also been caused where this heat was transmitted, as in the case of a container, through the metal to a flammable atmosphere or to combustibles within the container.

Anything which is combustible or flammable is susceptible to ignition by the cutting and welding. The most common materials

3233. See that cutting and welding are so scheduled that plant operations that might expose combustibles to ignition are not started during cutting or welding.

324. He shall secure authorization for the cutting or welding operations from the designated management representative (see 312).

325. He shall determine that the cutter or welder secures his approval that conditions are safe before going ahead.

326. He shall determine that fire protection and extinguishing equipment are properly located at the site.

327. Where fire watchers are required (see 43); he shall see that they are available at the site.

33. The Cutter or Welder shall handle his equipment safely and use it so as not to endanger lives and property.

331. He shall have approval by his supervisor before he starts to cut or weld.

332. He shall not cut or weld where conditions are not safe.

333. He shall continue to cut or weld only so long as conditions are unchanged from those under which approval was granted.

4. Fire Prevention Precautions. Cutting or welding shall be permitted only in areas that are or have been made firesafe (see 42). Within the confines of an operating plant or building, cutting and welding should preferably be done in a specific area designed or approved for such work, such as a maintenance shop or a detached outside location. Such areas shall be of noncombustible or fire-resistant construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. When work cannot be moved practically, as in most construction work, the area shall be made firesafe by removing combustibles or protecting combustibles from ignition sources.

41. Cutting or welding shall not be permitted in the following situations:

411. In areas not authorized by management.

412. In sprinklered buildings while such protection is impaired.

413. In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumula-

tion of combustible dusts. (See Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers, NFPA No. 327; and Safety Practices for Welding and Cutting Containers That Have Held Combustibles, AWS A6.0 (1965).\*)

414. In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper or cotton.

42. Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations to ensure that it is a firesafe area. He shall designate precautions to be followed in granting authorization to proceed, preferably in the form of a written permit. (A suggested form of written permit is shown in the Appendix. It may be modified to suit local conditions.) He shall sign the permit or otherwise authorize the work, and shall assure himself of the following:

421. That the cutting and welding equipment to be used is in satisfactory operating condition and in good repair.

422. Where combustible materials such as paper clippings, wood shavings or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet. Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, personnel operating are welding or cutting equipment shall be protected from possible shock.

423. Where practicable, all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impracticable, combustibles shall be protected with flame-proofed covers or otherwise shielded with metal or asbestos guards or curtains. Edges of covers at the floor should be tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile.

424. Wall or floor openings or cracks within 35 feet of the site shall be tightly covered to prevent the passage of sparks to adjacent areas.

425. Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

\*Available from American Welding Society, 345 East 47th Street, New York, New York 10017.

426. Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition. If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided. Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

427. Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

428. Portable fire extinguishers, appropriate for the type of possible fire, shall be concentrated at the work area. Where hose lines are available, they shall be connected and ready for service.

429. He shall see that nearby personnel are suitably protected against heat, sparks, slag, etc.

43. Fire Watchers shall be required by the individual responsible for authorizing cutting and welding whenever cutting or welding is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

- (a) Appreciable combustible material in building construction or contents closer than 35 feet to the point of operation.
- (b) Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.
- (c) Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.
- (d) Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

431. Fire watchers shall have fire extinguishing equipment readily available and be trained in its use.

432. Fire watchers shall be familiar with facilities for sounding an alarm in the event of a fire.

433. Fire watchers shall watch for fires in all exposed areas, and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm.

434. A fire watch shall be maintained for at least a half hour after completion of cutting or welding operations to detect and extinguish possible smoldering fires.

44. Where a fire watcher is not required, a Final Check-Up shall be made one-half hour after the completion of cutting or welding operations to detect and extinguish possible smoldering fires.

45. "Hot tapping" or other cutting or welding on a flammable gas or liquid transmission or distribution utility pipeline shall be performed by a crew qualified to make hot taps. For a gas pipeline, see 841.28 in "Gas Transmission and Distribution Piping Systems", ANSI B31.8 (1968)\*.

\*Available from American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, New York 10017.

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AMINOIL DEVELOPMENT CO., INC.  
DESIGNATED SAFE WELDING AREA  
EAST CAMERON BLOCK 322 PLATFORM "A"  
Dec. 15, 1976

All welding and burning on this platform shall be done in accordance with Aminoil's "Safe Practices and Procedures Plan for Welding and Burning".

The designated areas for safe welding and burning on E.C. 322 "A" are shown on the attached plats. These areas are described as follows:

A. Boat Landing Deck

1. Boat Landings and Walkways

B. Cellar Deck-Wellhead Deck

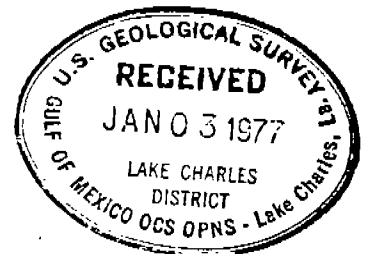
1. Steel plated deck area behind firewall in mid-section of platform.

C. Production Deck

1. Steel plated deck overhang on northwest portion of platform.

D. Quarters Deck

1. Steel plated shop area under elevated quarters building.





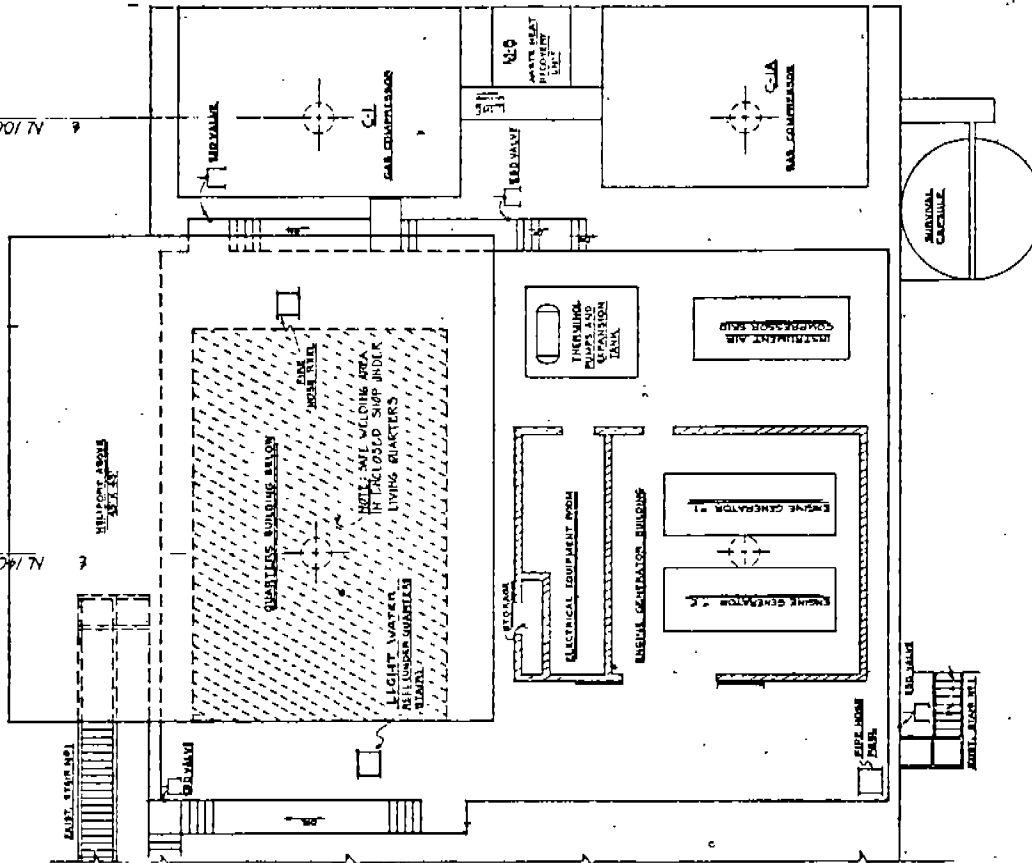


N 100'-0" 4

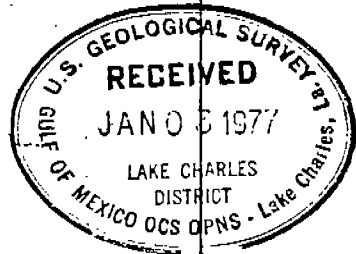
N 140'-0" 2

E 140'-0" 6

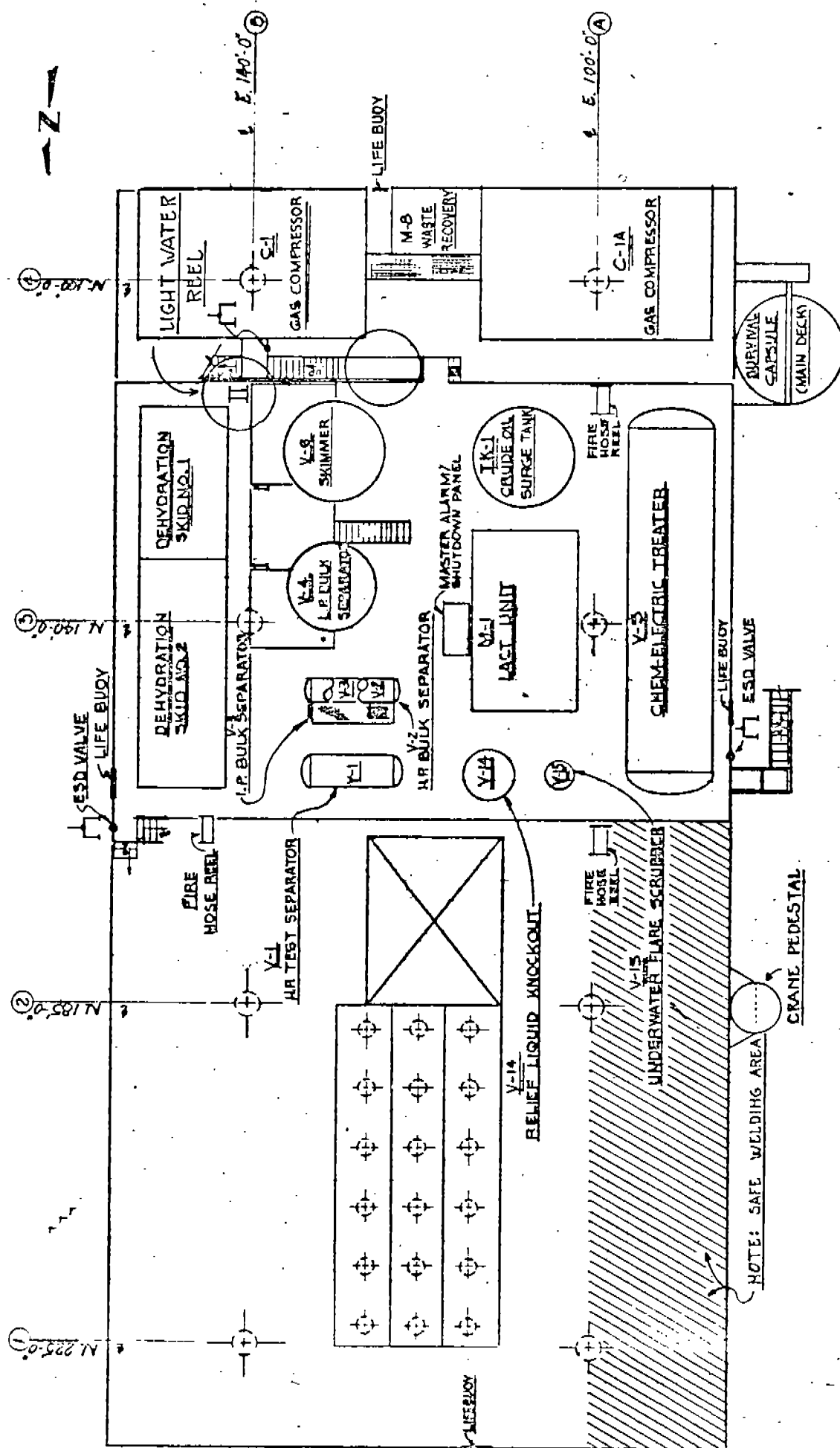
E 100'-0" A



AMINOIL USA UNIVERSITY-CENTRAL OILFIELD DISTRICT	
PLAN VIEW	
QUARTERS DECK-DECK 1'	
EAST CAMERON BLK 922'-A'	
DATE	NOV 1977
BY	AMC
CHECKED BY	
SCALE	AS SHOWN
PROJECT NO.	LOA 95-1
DATE	
DESCRIPTION	
DATE	
DESCRIPTION	
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DESCRIPTION	



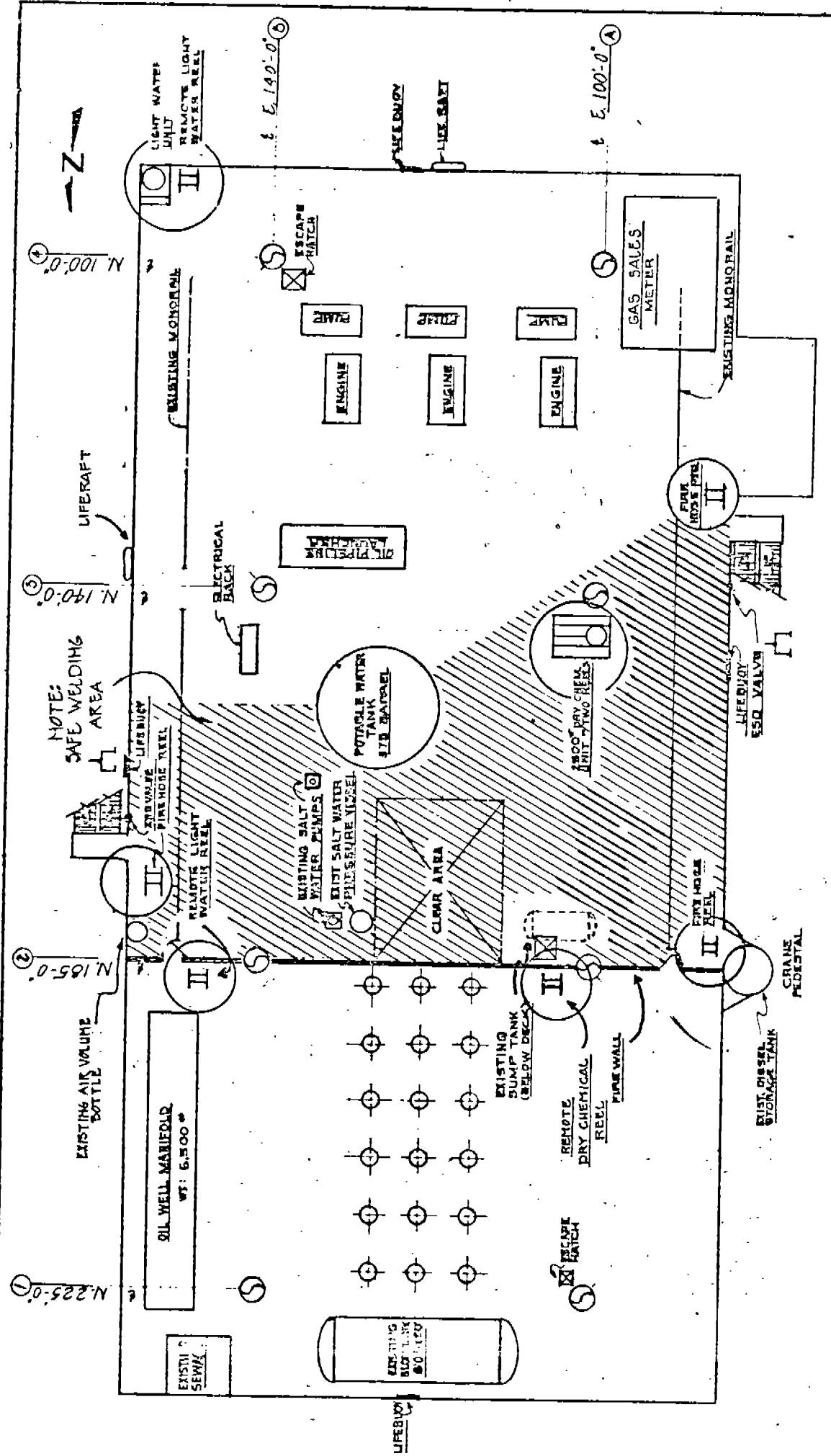
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AMINO, U.S.A. - LA. GULF COAST DISTRICT  
 PLAN VIEW  
 PRODUCTION DECK - "DECK 2"  
 EAST CAMERON BLK. 322 - "A"

DESIGN:	DEPT. PRODUCTION	DWS. NO.
DRAWN: AMC	SCALE:	LDA-26-2
APPROVED:	DATE: 12-3-76	

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AMINOL, USA - LA. GULF COAST DISTRICT  
 PLAN VIEW  
 CELLAR DECK - WELLHEAD DECK  
 EAST CAMERON BLK. 322JA\*

DESIGN:	DEPT: PRODUCTION	DWG. NO:
DRAWN: AMC/	SCALE:	LDA-26-3
APPROVED:	DATE: 12-6-76	

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④ N. 100'-0"

⑤ N. 140'-7"

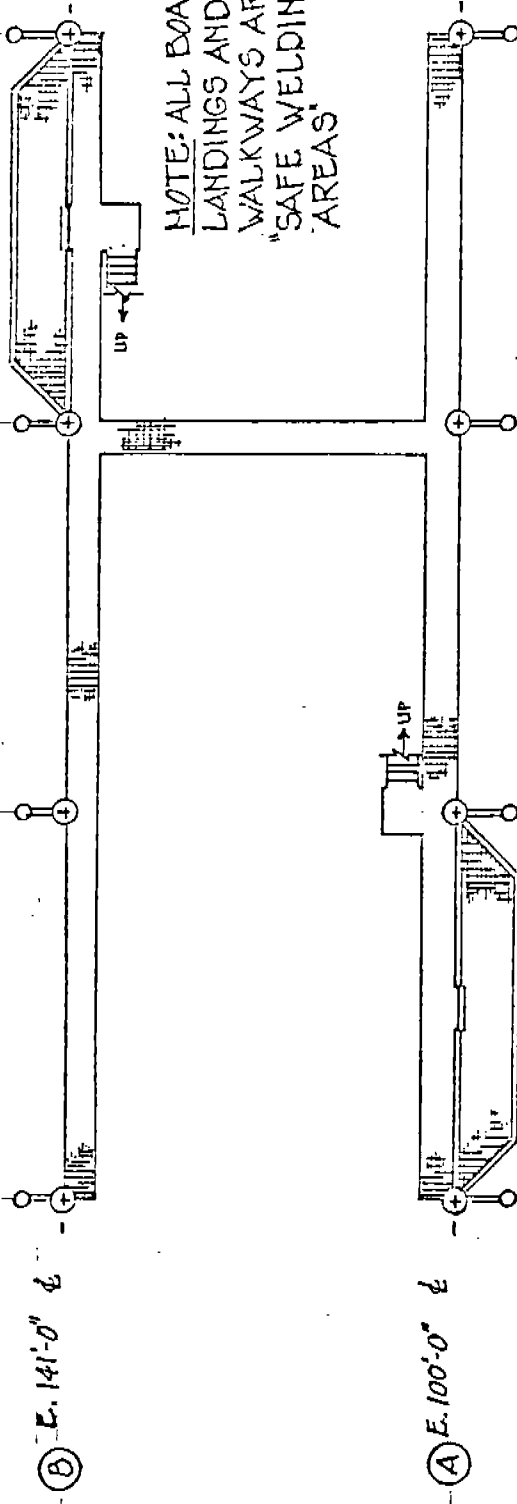
⑥ N. 165'-7"

⑦ N. 226'-2"

⑧ E. 141'-0"

⑨ E. 100'-0"

NOTE: ALL BOAT  
LANDINGS AND  
WALKWAYS ARE  
"SAFE WELDING  
AREAS"



BOAT LANDING

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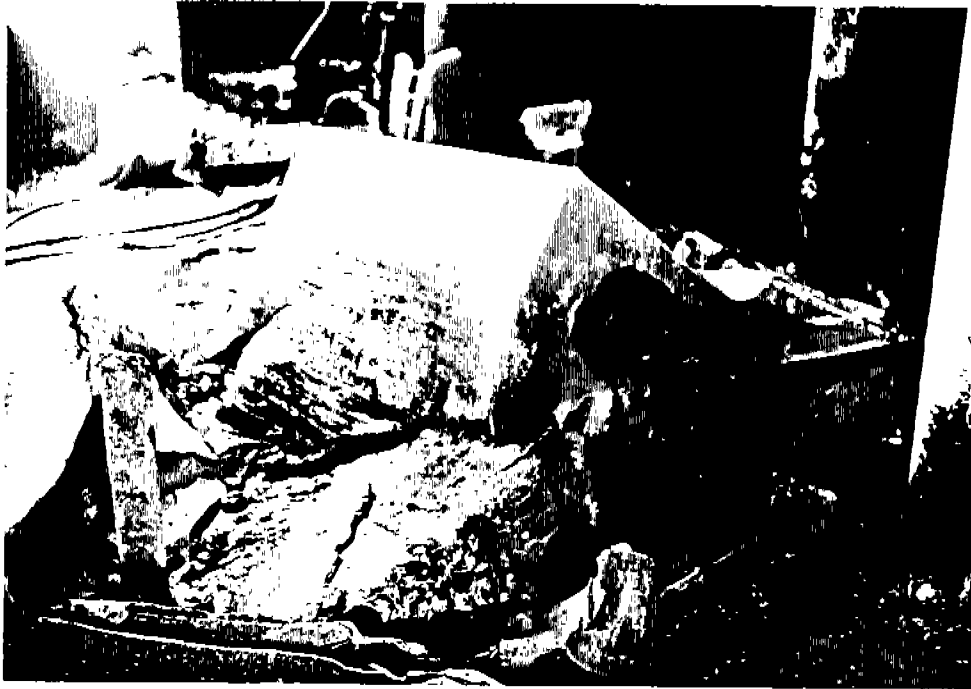
DESIGN:
RAWN: JTR
CHECKED:
APPROVED:
DATE: 12-20-76

AMINOIL, USA

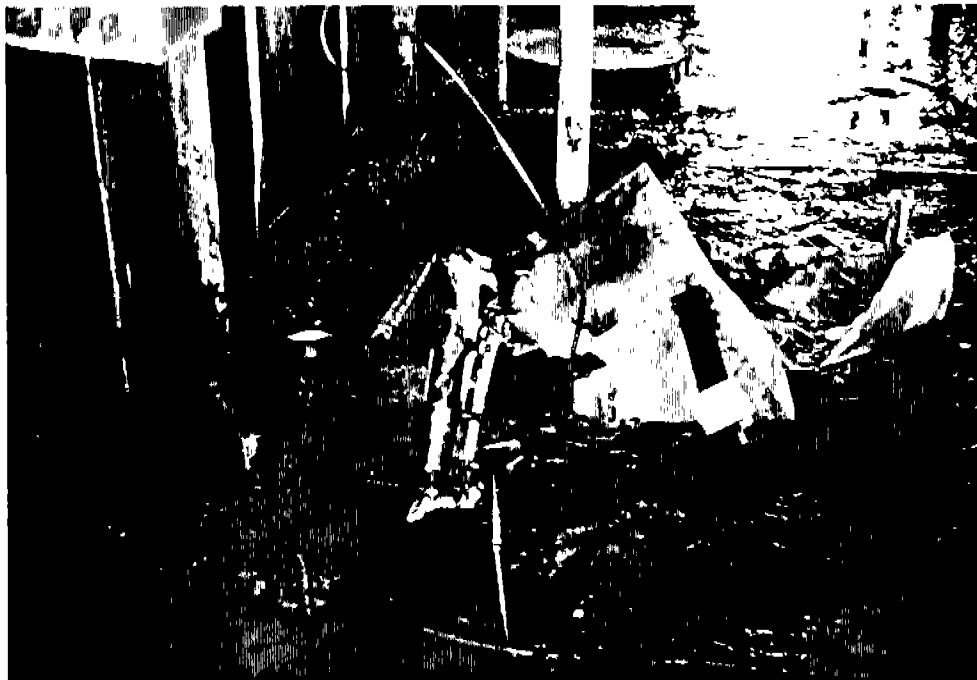
PLAN VIEW  
BOAT LANDING DECK  
EAST CAMERON BLK. 322 "A"

DEPT. PRODUCTION
SCALE AS SHOWN
DRAWING NO. LDA-26-4

DESTROYED TANK

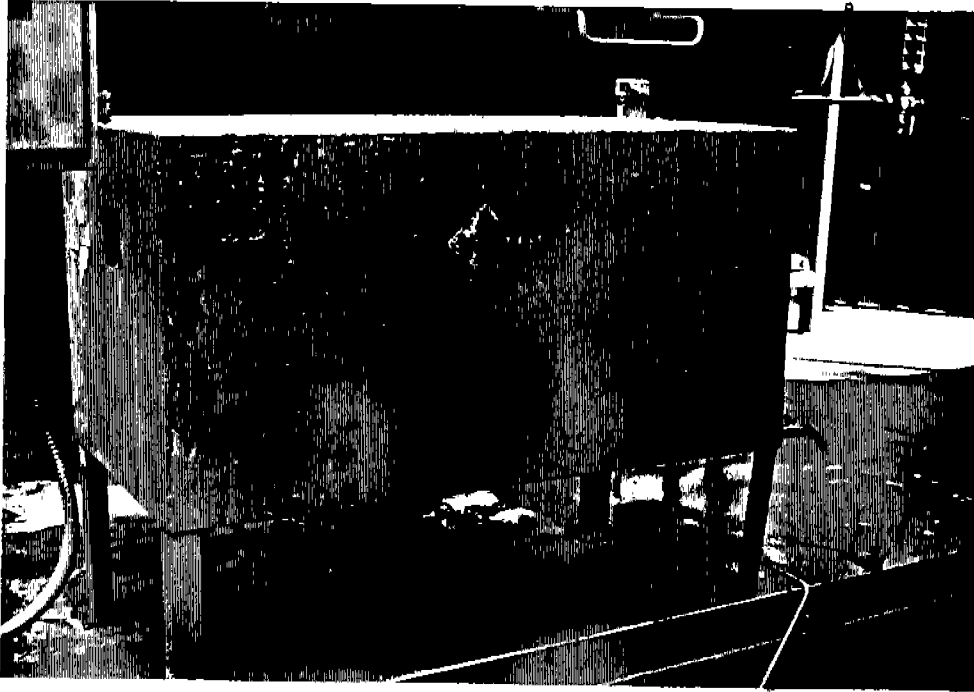


DESTROYED TANK

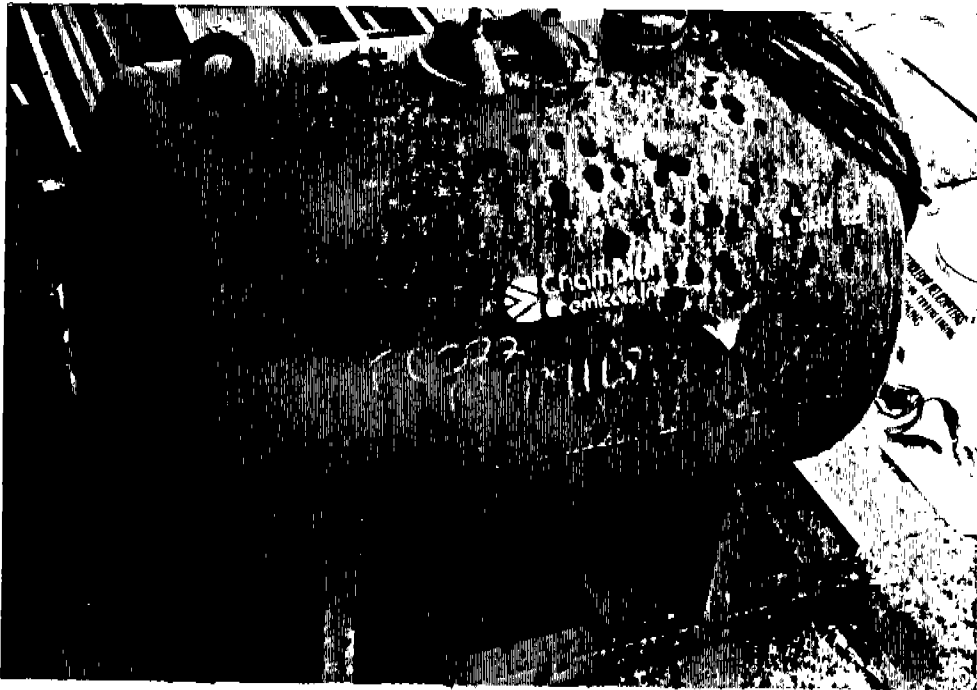


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SIMILAR TANK



BULK STORAGE VESSEL



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DON MORSE  
MANAGER REGULATORY AFFAIRS



August 20, 1984



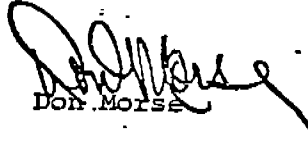
Mr. Leonard Casey  
Aminoil USA Inc.  
1326 Pinhook Road  
Lafayette, La. 70505

Dear Mr. Casey:

Enclosed is the Material Safety Data Sheet and the Technical Data Sheet on Champion Chemicals, Inc. EMULSOTRON X-156.

Should you need more information, please feel free to call on me.

Sincerely yours,

  
Don Morse

BEST AVAILABLE COPY

Champion Chemicals, Inc.

P. O. BOX 45509 • HOUSTON, TEXAS 77045 • (713) 431-2561

# TECHNICAL DATA



P.O. BOX 45509 • HOUSTON, TEXAS 77045 • (713) 431-2561  
1313 FIRST CITY NATIONAL BANK BLDG. • HOUSTON, TEXAS 77002 • (713) 652-0879

## EMULSOTRON X-156

### General Description:

EMULSOTRON X-156 is a resin and polyol blend dissolved in an aromatic solvent. These high molecular weight compounds are blended with an anionic substance.

X-156 can be used in a wide variety of crude oils and gives excellent emulsion breaking tendencies.

### Physical Properties:

Specific Gravity	0.94
Pounds per Gallon	7.8
Pour Point	-25° F
Flash Point (TCC)	75° F

### Recommended Uses:

Injection at wellhead at a rate of 1-2 quarts/100 barrels of emulsion, allowing water and oil to separate before going to storage.

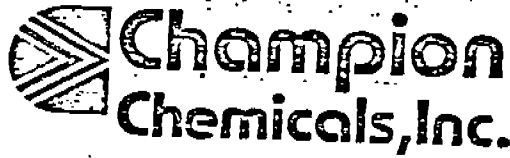
Injection into flowline before heater treater to increase speed and completeness of separation.

For further information and specific recommendations, please contact your local CHAMPION representative.

8-84

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# MATERIAL SAFETY DATA SHEET

<b>SECTION I</b>	
<b>MANUFACTURER'S NAME</b> CHAMPION CHEMICALS, INC., <b>ADDRESS</b> 3130 FM 521, Fresno, Texas 77545 P.O. Box 45509, Houston, Texas 77045	<b>EMERGENCY TELEPHONE NO.</b> 713/431-2561
<b>CHEMICAL FAMILY</b> aromatic solvent	<b>PRODUCT</b> EMULSOTRON X-156 <b>FORMULA</b> proprietary

<b>SECTION II - HAZARDOUS INGREDIENTS</b>					
MATERIALS	%	TLV (Units)	MATERIALS	%	TLV (Units)
solvent	56	100 (ppm)			
methanol	4.4	200 (ppm)			

<b>SECTION III - PHYSICAL DATA</b>			
<b>BOILING POINT (° F.)</b>	250-500	<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1)</b>	0.94
<b>VAPOR PRESSURE (mm Hg.)</b>		<b>PERCENT VOLATILE BY VOLUME (%)</b>	
<b>VAPOR DENSITY (AIR = 1)</b>		<b>EVAPORATION RATE</b>	nil
<b>SOLUBILITY IN WATER</b>	nil		
<b>APPEARANCE AND ODOR</b> dark, pungent			

<b>SECTION IV - FIRE AND EXPLOSION HAZARD DATA</b>			
<b>FLASH POINT</b> 75°F (TCC)	<b>FLAMMABLE LIMITS</b>		<b>LEL</b> <b>UEL</b>
<b>EXTINGUISHING MEDIA</b> <input type="checkbox"/> ALCOHOL FOAM <input checked="" type="checkbox"/> CARBON DIOXIDE <input type="checkbox"/> OTHER	<input type="checkbox"/> DRY CHEMICAL	<input checked="" type="checkbox"/> FOAM	<input type="checkbox"/> WATER SPRAY (FOG)

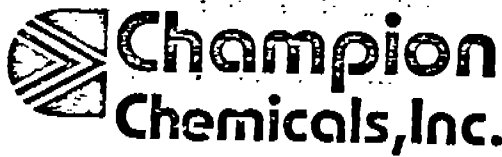
**SPECIAL FIRE FIGHTING PROCEDURES**  
 Water spray may be used to cool fire-exposed metal containers to prevent re-ignition from hot surfaces.  
 Do not breathe smoke or hot fumes.

<b>FIRE AND EXPLOSION HAZARDS</b> None Known	<b>BEST AVAILABLE COPY</b>
---	----------------------------

<b>TRANSPORTATION DATA</b>	
<b>US DEPARTMENT OF TRANSPORTATION HAZARD CLASS</b> FLAMMABLE LIQUID	<input type="checkbox"/> UNREGULATED BY D.O.T.
<b>LABEL REQUIRED</b> FLAMMABLE LIQUID	
<b>US D.O.T. PROPER SHIPPING NAME</b> FLAMMABLE LIQUID, N.O.S.	<b>UN NUMBER</b> UN 1993

NA = Not Applicable

ND = No Data Available



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# MATERIAL SAFETY DATA SHEET

## SECTION I

MANUFACTURER'S NAME  
**CHAMPION CHEMICALS, INC.,**  
 ADDRESS 3130 FM 521, Fresno, Texas 77545  
 P.O. Box 45509, Houston, Texas 77045

EMERGENCY TELEPHONE NO.  
 713/431-2561

CHEMICAL FAMILY  
 aromatic solvent

PRODUCT **EMULSOTRON X-156**  
 FORMULA **proprietary**

## SECTION II - HAZARDOUS INGREDIENTS

MATERIALS	%	TLV (Units)	MATERIALS	%	TLV (Units)
solvent	56	100 (ppm)			
methanol	4.4	200 (ppm)			

## SECTION III - PHYSICAL DATA

BOILING POINT (° F.)	250-500	SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	0.94
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE	nil
SOLUBILITY IN WATER	nil		
APPEARANCE AND ODOR	dark, pungent		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 75°F (TCC)	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA			
<input type="checkbox"/> ALCOHOL FOAM <input checked="" type="checkbox"/> CARBON DIOXIDE <input type="checkbox"/> DRY CHEMICAL <input checked="" type="checkbox"/> FOAM <input type="checkbox"/> WATER SPRAY (FOG) <input type="checkbox"/> OTHER			
SPECIAL FIRE FIGHTING PROCEDURES			
Water spray may be used to cool fire-exposed metal containers to prevent re-ignition from hot surfaces.  Do not breathe smoke or hot fumes.			
FIRE AND EXPLOSION HAZARDS			
None Known			

## TRANSPORTATION DATA

US DEPARTMENT OF TRANSPORTATION HAZARD CLASS FLAMMABLE LIQUID	<input type="checkbox"/> UNREGULATED BY D.O.T.
LABEL REQUIRED FLAMMABLE LIQUID	
US D.O.T. PROPER SHIPPING NAME FLAMMABLE LIQUID, N.O.S.	UN NUMBER UN 1993

NA = Not Applicable

ND = No Data Available

**SECTION V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

None established

EFFECTS OF OVEREXPOSURE

- EYES Irritation, burning.
- SKIN CONTACT Irritation, Sensitized skin may show dermatitis.
- INHALATION Nausea, shortness of breath, dizziness.
- IF SWALLOWED Vomiting, nausea.

BEST AVAILABLE COPY

EMERGENCY AND FIRST AID PROCEDURES

- EYES Flush eyes with water 10-15 minutes. Consult physician if irritation persists
- SKIN CONTACT Wash skin with fresh water. Launder clothes before re-wearing.
- INHALATION Remove to fresh air.
- IF SWALLOWED Drink water or milk to dilute. Consult emergency medical aid.

**SECTION VI - REACTIVITY DATA**

STABILITY: UNSTABLE STABLE X

CONDITIONS TO AVOID  
Sources of ignition.

INCOMPATIBILITY (Materials to avoid)

Strong oxidizing agents such as mineral acids.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION: MAY OCCUR

WILL NOT OCCUR X

CONDITIONS TO AVOID

**SECTION VII - SPILL OR LEAK PROCEDURES**

- |  |   |   |   |
|--|---|---|---|
| <input type="checkbox"/> EVACUATE AREA                                 | <input type="checkbox"/> RESPIRATORY PROTECTION (AS PER SECTION VIII) | <input type="checkbox"/> EVAPORATE SMALL AMOUNTS IN HOOD          | <input type="checkbox"/> NEUTRALIZE AND WASH AWAY WITH WATER                    |
| <input checked="" type="checkbox"/> STOP FLOW                          | <input type="checkbox"/> SKIN PROTECTION (AS PER SECTION VIII)        | <input type="checkbox"/> INCINERATE UNDER CONTROLLED CONDITIONS   | <input type="checkbox"/> OBSERVE GOVERNMENTAL SPILL & WATER QUALITY REGULATIONS |
| <input type="checkbox"/> ELIMINATE ALL SOURCES OF IGNITION, FLAMMABLES | <input checked="" type="checkbox"/> ABSORB OR SCRAPE UP               | <input type="checkbox"/> INCINERATE USING AFTER BURNER & SCRUBBER | <input checked="" type="checkbox"/> REMOVE SOILED CLOTHING                      |
| <input checked="" type="checkbox"/> AVOID INHALATION                   | <input type="checkbox"/> VACUUM UP                                    | <input checked="" type="checkbox"/> LANDFILL OR LANDFARM          | <input type="checkbox"/> KEEP UPWIND AND ISOLATE EXPOSURE AREA                  |
| <input checked="" type="checkbox"/> AVOID DERMAL CONTACT               | <input type="checkbox"/> OTHER  | <input type="checkbox"/> SECURE CHEMICAL LANDFILL                 |   |

**SECTION VIII - SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type)  
None required.

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

Recommended.

PROTECTIVE GLOVES

rubber or plastic

EYE PROTECTION

chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT

Protective clothing, eye baths, showers.

**SECTION IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

Do not take internally.



P.O. BOX 45509  
HOUSTON, TEXAS 77045

(713) 431-2561  
Telex 762-012

September 10, 1984  
File No.: 132-84

Mr. Dennis Leary  
Aminoil  
P.O. Box 924193  
Houston, Texas 77292-4193

Dear Mr. Leary:

Analysis have been completed on the two samples you submitted in regard to Champion Chemicals' product used on the platform where a fire recently occurred. The product reportedly in use is Emulsotron X-156. This is consistent with our records of what has been delivered and matches the samples submitted.

Sample A was described as taken from the chemical bulk storage tank, unaffected by the fire. Sample B was taken from residue on the deck where the fire occurred.

Sample A had a flash point of 70° F (TCC) which is within test error of the 72° F flash point reported for Emulsotron X-156.

Volatile portion of each sample was determined by distillation. Sample A showed 4.2% volatile below 120° F (methanol), Sample B showed Nil. Sample A had total of 36.7% nonvolatile at 220° F after four hours (Volatiles equal 4.2% methanol, 59.1% heavy aromatic naphtha). Sample B had total of 40.6% nonvolatile at 220° F after four hours (Volatiles equal 59.4% heavy aromatic naphtha).

Infrared scans show functional peaks in Sample A identical to fresh Emulsotron X-156. Although there were several similar functional group peaks to X-156 in the infrared scan of Sample B, there were also several major differences. First of all, many nonionic surface active agents commonly found in demulsifiers have very similar infrared scans. From the infrared scan of Sample B, we cannot positively verify that it is a residue of Emulsotron X-156, although it does appear to contain similar surface active agents.

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A sample of Emulsotron X-156 was burned in the lab and the resulting scan still did not match Sample B. There is either considerable contamination in Sample B from mixing products or extinguishing material or Sample B from a product other than Emulsotron X-156.

Please do not hesitate to call on me if more information is required.

Sincerely,



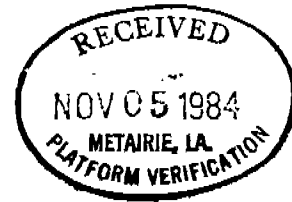
A. R. Loudon  
Manager of Research and Development

ARL/ps  
Attachments

cc: Tom McCauley, Aminoil  
C.O. Bundrant  
Don Morse



November 1, 1984



Minerals Management Service  
P. O. Box 7966  
3301 N. Causeway Blvd.  
Metairie, Louisiana 70010-7966

Attn: Mr. Dan Bourgeois

Sir:

As per your request, attached is a copy of the Material Safety Data Sheet prepared by Southern Petroleum Laboratories for Emmulestron X-156.

Should you have any questions, or if we can be of further service, please advise.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Dennis'.

D. F. Lery  
Manager, Loss Prevention  
Gulf Coast Area

DFL/b

Attachments

xc: D. M. Whitney  
L. J. Nunez  
George B. Jurgens III  
Mulino, Benson, Woodward, Hillyer, Pierson & Miller  
1100 Whitney Building  
New Orleans, LA 70130

# MATERIAL SAFETY DATA SHEET

## IDENTIFICATION

Name	EMULSOTRON X-156	Chemical Family	NON-IONIC SURFACTANT
Grade	UNKNOWN	Formula	PROPRIETARY
Synonyms		CAS Registry No.	UNKNOWN
CAS Name			

## PHYSICAL DATA

Boiling Point, 760 mm HG	250-376	Melting Point	
Specific Gravity	0.94	Vapor Pressure	81mm @ 100° F.
Vapor Density	7.35	Solubility in H <sub>2</sub> O	INSUFFICIENT SAMPLE TO DETERMINE
% Volatiles by Vol. Dist.	50%	Evaporation Rate (Butyl Acetate = 1)	>1 NIL
Form LIQUID Appearance	DARK COLOR	Color	DARK Odor PUNGENT
pH Information	INSUFFICIENT SAMPLE	Octanol/Water Partition Coefficient	INS. SAMPLE

## HAZARDOUS COMPONENTS

<u>Material(s)</u>	<u>Approximate %</u>	<u>TLV</u>
HEAVY AROMATIC NAPHTHA (HEAVIER THAN XYLENE)	56	100 ppm
*METHANOL	4	200 ppm

## HAZARDOUS REACTIVITY

Instability	STABLE - AVOID SOURCE OF IGNITION
Incompatibility	AVOID STRONG OXIDIZING AGENTS
Decomposition	NONE KNOWN
Polymerization	WILL NOT OCCUR

\*NOTE: Our analysis shows only 0.6% methanol. We see by G.C about 7% light naphtha which will cause a low flash.

## FIRE AND EXPLOSION DATA

Flash Point                    Method                    Autoignition Temperature  
- INSUFFICIENT SAMPLE FOR THESE -  
ESTIMATED 70-75° F., T.C.C.

### Flammable Limits in Air, % by Vol.

Lower	%	UNKNOWN
Upper	%	

### Fire and Explosion Hazards

STORE IN COOL AREA AWAY FROM FLAME AND SPARKS

### Extinguishing Media

CO<sub>2</sub> - FOAM - HALON

### Special Fire Fighting Instructions

WATER SPRAY MAY BE USED TO COOL FIRE. EXPOSED METAL CONTAINERS SHOULD BE USED TO PREVENT RE-IGNITION FROM HOT SURFACE. DO NOT BREATHE SMOKE OR FUMES.

## HEALTH HAZARD INFORMATION

### Exposure Limits

UNKNOWN

### Significant Routes and Effects of Exposure

EYES - IRRITATION, BURNING

SKIN - IRRITATION, MAY CAUSE DERMATITIS

INHALATION - MAY CAUSE NAUSEA , DIZZINESS, AND SHORTNESS OF BREATH

INJECTION - MAY CAUSE VOMITING, NAUSEA

### Safety Precautions

PROTECTIVE CLOTHING, RUBBER GLOVES, EYE BATH, SAFETY SHOWER

### First Aid

EYES - FLUSH 10-15 MINUTES WITH WATER, SEE PHYSICIAN

SKIN CONTACT - WASH SKIN WITH FRESH WATER, LAUNDER CLOTHES

INHALATION - REMOVE TO FRESH AIR

INJECTION - DRINK WATER, MILK AND CONSULT PHYSICIAN



**PROTECTION INFORMATION**

**Ventilation**

NORMAL, AVOID INHALATION AND AVOID CONTACT

**Personal Protective Equipment**

GLOVES, SAFETY GOGGLES

**Other**

AVOID INJECTION

**DISPOSAL INFORMATION**

**Aquatic Toxicity**                      PROBABLY TOXIC TO FISH

**Spill, Leak or Release**            CONTAIN AND REMOVE BY APPROVED METHODS

**Waste Disposal**                      IN APPROVED SOLID WASTE DUMP

**SHIPPING INFORMATION**

**Transportation**

**DOT Hazard Class.\*:** FLAMMABLE LIQUID            **IMCO Class.:**

**DOT Shipping Name\*:** FLAMMABLE LIQUID,            **UN No.:** UN1993  
N.O.S.

**RQ Quantity\*:**

**\*49 CFR 172.101**

**Shipping Containers**    DOT DRUMS

**Storage Conditions**

## ADDITIONAL INFORMATION AND REFERENCES

The active agent appears to be a poly glycol of unknown molecular weight (probably polypropylene glycol).



Sept. 12, 1984

Minerals Management Service  
620 Esplanade  
Suite 104  
Lake Charles, Louisiana 70605-2894

Attn: R. H. Darrow  
Dist. Supervisor

**RE: REPORT OF FIRE OCCURRING AT AMINOIL'S EAST CAMERON 322 PLATFORM  
ON AUGUST 17, 1984**

This report is being submitted to the MMS in accordance with 30 CFR 250.45.

On August 16, 1984, Production Welders, Inc., Abbeville, Louisiana, supplied four welders to Aminoil, Inc. for the purpose of replacing deteriorating grading and hand rails on the production deck of Aminoil's East Cameron 322-A platform. (See attached station bill.) Those welders were: Mr. W. C. Borque; Mr. R. Babineaux; Mr. R. L. Duboise; and Mr. J. A. Lange. Mr. Lee Romero, Construction Foreman, was the Aminoil construction representative assigned to that project.

The Production Welders' project started on August 16, 1984. Mr. Alvin Lemaire, Construction Foreman, relieving Mr. Don Tillman, instructed the sandblasting and painting crew to clean the well-bay area prior to Production Welders, Inc. starting work. At approximately 5:00 p.m., the platform was shut in and bled down. Then Mr. Romero sniffed the well-bay area where the Production Welding crew was to work. Once the area was determined to be free of hydrocarbons, Mr. Romero conducted a meeting with the welders in the well-bay area. The meeting covered both the particulars of the job to be accomplished and safety items such as escape capsule and hazardous areas. At approximately 6:15 p.m., the work began and lasted until 6:00 a.m. the following morning.

On August 17, 1984, prior to 6:00 p.m., the following occurred: (1) the platform was shut in and bled down; (2) the slop tank was pumped out and blocked in; (3) sandblasting and painting contractors cleaned the well-bay area; (4) the well-bay area was again sniffed for hydrocarbons. At approximately 6:00 p.m. Mr. Romero held a meeting with the welders to review the work to be done that night. Removal of the old grating started at approximately 6:10 p.m. and continued until approximately 11:00 p.m.

Minerals Management Service  
Page Two  
September 12, 1984

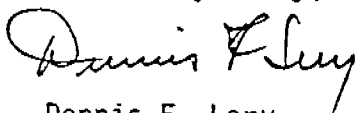
At approximately 11:00 p.m., Mr. Romero held another meeting with the welders to outline the task of removing the handrails from around the well-bay platform. These handrails were located in the same area where cutting had been performed on August 16th and on the 17th from 6:00-11:00 p.m. It was decided that two welders would start on the east side of the platform and two on the west side. Mr. Jed Lange and Mr. Rodney Duboise went to the east side of the platform and started to work the southeast corner. (See attached station bill.) Mr. Romero and the other two welders stayed on the west side of the platform. At approximately 11:10 p.m., a fire erupted in the southeast corner of the platform. Mr. Romero went around the platform, picked up a fire hose and proceeded to extinguish the fire. At the same time, the other two welders on the other side of the platform, proceeded to spread the alarm. The Production personnel proceeded to assist Mr. Romero in fighting the fire. The other contract people (American Offshore Painters, Inc.) proceeded to the escape capsule and donned life jackets. The fire was brought under control at approximately 11:45 p.m.

Although it is unclear how the fire actually started, it is believed that a tank containing a chemical called Emulsotron X-156 which was located in the vicinity of the area where Lange and Duboise were cutting, was the source of the combustible material involved in the fire. It should be noted that the tank containing Emulsotron had been "sniffed" prior to the occurrence of the fire to insure that it was free of flammable gas air mixture.

As a result of the fire, Mr. Jed Lange was fatally injured and Mr. Rodney Duboise received second degree burns to the left arm and hand and slight burns to the face.

If further information is needed, please advise.

Yours very truly,



Dennis F. Lery  
Manager, Loss Prevention  
Gulf Coast Area

DFL:bv

xc: Minerals Management Service  
P. O. Box 7966  
3301 N. Causeway Blvd.  
Metairie, Louisiana 70010-7966

Attn: Mr. Dan Bourgeois

D. M. Whitney - Aminoil  
G. D. Tisserat - Aminoil

George B. Jurgens III  
Milling, Benson, Woodward,  
Hillyer, Pierson & Miller  
100 Whitney Building  
New Orleans, Louisiana 70130