APROXIMACIÓN AL ESTUDIO DEL RIESGO DEL BLEVE Y SUS EFECTOS EN LOS GENERADORES MARINOS DE VAPOR Y LOS TANQUES DE CARGA DE LOS BUQUES LNG-LPG. APLICACION COMPARATIVA DE LAS NORMAS QUE LO REGULAN Y PREVIENEN.

Autor: German de Melo Rodriguez
Director: Emilio Eguia López

Barcelona, mayo de 1994
MHIDAS is an information retrieval system in which the data has been selected by professional engineers from published material. The causes attributed to the incidents in the database do not necessarily represent the views of the Health and Safety Executive.

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Telephone: 0925 254305  
Fax: 0925 254537  
Telex: 629301
RECORD : 131  CONTRIBUTOR : SRD
DATE : /12/82  Town/Village/Rural: PORTUGAL
PLACE :  MATERIAL TYPE : RLGAS  HAZARDS : FI
MATERIAL NAME : LPG  MATERIAL CODE: 1075
INCIDENT TYPE : FIRE  ORIGIN : TRANSPORT SHIP
GENERAL CAUSES :
SPECIFIC CAUSES:
QUANTITY : Tonnes  DAMAGE $ : X 10E6
NUMBER KILLED :  INJURED:  EVACUATED: X 10E3
IGNITION SOURCE: AT TIME : SECS FROM SPILL
KEYWORDS : COMPANY DESIGN
ABSTRACT : 2481m³ LPG CARRIER "BANDIM" FULLY LOADED WITH SEMI-PRESSURISED/SEMI-REFRIGERATED CARGO IN 4 SPHERICAL TANKS. DELIBERATELY SUNK AFTER FIRE. FIRE WHICH WAS THOUGHT TO HAVE STARTED IN ENGINE ROOM DID NOT AFFECT CARGO. COMPANY = SACOR MARITIME.

NUMBER OF REFERENCES: 1  CODER : KWB
TEXTFILE (Yes or No): N
### Abstract

A huge explosion ripped through an LPG carrier after it was loaded with 15000 tonnes of LPG and prepared for a load of ammonia. Extensive damage to the aft part of the ship, and the carrier was deliberately sunk after the fire. The explosion was thought to have started in the engine room, but it did not affect the cargo.

### Record Details
- **Record**: 4121
- **Date**: 27/10/90
- **Place**: Pajaritos
- **Material Type**: LPG
- **Incident Type**: Explode
- **Damage**: $X \times 10^6$
- **Ignition Source**: At time: SECS FROM SPILL

### Material Information
- **Material Code**: 1075
- **Material Name**: LPG
- **Surface**: Transfer

### General Causes
- Number of references: 3

### Specific Causes
- **Number of References**: 3
- **Textfile (Yes or No)**: No

### Keywords
- A huge explosion ripped through an LPG carrier after it was loaded with 15000 tonnes of LPG and prepared for a load of ammonia. Extensive damage to the aft part of the ship, and the carrier was deliberately sunk after the fire. The explosion was thought to have started in the engine room, but it did not affect the cargo.

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**HSE Health & Safety Executive**

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**MHIDAS Major Hazard Incident Data Service**
DATE: 01/10/79
PLACE: SUDA BAY
MATERIAL TYPE: LPGAS
MATERIAL NAME: PROPANE
INCIDENT TYPE: EXPLODE FIRE
GENERAL CAUSES: EXTERNAL
SPECIFIC CAUSES: EXTNLFIRE
QUANTITY: Tonnes
NUMBER KILLED: 6
NUMBER INJURED: 140
IGNITION SOURCE: AT TIME: SECS FROM SPILL
KEYWORDS: PROPERTY INJURIES MISSILES EXTENT TIMING
ABSTRACT: FIRE IN ENGINE ROOM OF FREIGHTER SPREAD TO STORED CARGO WHICH INCLUDED BYNITE, LPG & PETROL. SERIES OF EXPLOSIONS THREW DEBRIS 800m DAMAGING SHOPS, HOUSES & ELECTRIC/TELEPHONE LINES.

NUMBER OF REFERENCES: 3
TEXTFILE (Yes or No): N

CODER: AW

Major Hazard Incident Data Service
In the engine room of a freighter, a series of explosions followed by fire resulted in extensive damage to shops, houses, and telephone lines. Debris was thrown over 800m, causing damage to shops, houses, and telephone lines.

**Abstract:**

Strong winds caused a cargo boat to hit a pier. Collision resulted in 50m of pier collapsing and damage to an LPG pipe. Damage pipe released quantity of LPG into the sea.
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<thead>
<tr>
<th>RECORD</th>
<th>3374</th>
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<tbody>
<tr>
<td>DATE</td>
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<tr>
<td>MATERIAL TYPE</td>
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<td>PROPANE</td>
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<td>KEYWORDS</td>
<td>COMPANY RESPONSE WEATHER</td>
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<td>ABSTRACT</td>
<td>THREE LEAKS FOUND IN BOTTOM OF A 10MILLION GALLON PROPANE TANK.WATER SPRAYED INTO THE AIR AND A STRONG BREEZE DISPERSED VAPOUR.PROPANE REMOVED TO ROADTANKERS AND TO SHIP STANDING OFFSHORE.</td>
</tr>
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</table>

NUMBER OF REFERENCES: 1
TEXTFILE (Yes or No): N
SHIP STANDING OFFSHORE.

THREE LEAKS FOUND IN BOTTOM OF A 10MILLION GALLON PROPANE TANK. WATER SPRAYED INTO THE AIR AND A STRONG BREEZE DISPERSED THE VAPOURS. PROPANE REMOVED TO ROAD TANKERS AND TO TOWN/VILLAGE/RURAL:

MEXICO

MATERIAL CODE: 1075

ORIGIN: STORAGE

DAMAGE $: X 10E6

EVACUATED: 0

AT TIME: SECS FROM SPILL

IGNITION SOURCE: ELECTRIC MOTORENER

KEYWORDS: COMPANY KNOCK-OFF PROGRESS

ABSTRACT: LP GAS CLOUD ALLEGEDLY FROM SPILLAGE FROM BERTH WHERE MLPG TANK AHKATUN WAS LOADING. VESSEL EXPLODED APPARENTLY WHEN COVERED BY CLOUD, AND FIRE IMMEDIATELY SPREAD TO AHKATUN AND OTHER BERTHS. DETAILLED DAMAGE REPORTS INCLUDED.

NUMBER OF REFERENCES: 4

TEXTFILE (Yes or No): N

CODER: KOD

RECORD DATE: 3374

PLACE: ROSARITO

MATERIAL TYPE: PROPANE

MATERIAL NAME: LPG

GENERAL CAUSES:

INJURED: 15

NUMBER KILLED: 2

QUANTITY: Tonnes

NUMBER OF REFERENCES: 1

TEXTFILE (Yes or No): N

CODER: APF
**RECORD** : 643
**DATE** : 23/01/85
**PLACE** : WILHELMSHAVEN
**MATERIAL NAME** : BUTANE
**INCIDENT TYPE** : CONTROL GAS CLD
**GENERAL CAUSES** : MECHANICAL
**SPECIFIC CAUSES** : METALLURG
**QUANTITY** : Tonnes
**NUMBER KILLED** : 0
**INCIDENT TYPE** : NONIGNITE
**IGNITION SOURCE** : NONIGNITE
**NUMBER INJURED** : 0
**DAMAGE$$ : X 10E6
**EVACUATED** : X 10E3
**SECS FROM SPILL** :

**NUMBER OF REFERENCES**: 1
**TEXTFILE** (Yes or No) : N

**CONTRIBUTOR** : SRD
**CONTRIBUTOR** : Town/Village/Rural:
**GENERAL CAUSES** : WEST GERMANY
**SPECIFIC CAUSES** : TRANSFER
**MATERIAL CODE** : 1075
**ORIGIN** : LUSAS
**DATE** : 19/06/81

**ABSTRACT** : DURING FILLING OPERATION OF 3500m3 LPG TANK LIQUIFIED GAS WAS EMITTED AT TOP OF SUPPORT BRACE. VISIBLE CLOUD DRIFTED PAST SEVERAL OTHER STORAGE TANKS TOWARDS NEARBY RIVER. CLOSURE OF REFINERY AREA & SHIPPING MOVEMENTS PREVENTED IGNITION.
<table>
<thead>
<tr>
<th>INCIDENT TYPE</th>
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<th>SPECIFIC CAUSES</th>
<th>QUANTITY</th>
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<th>NUMBER INJURED</th>
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<td>MECHANICAL</td>
<td>METALLURG</td>
<td>Tonnes</td>
<td>0</td>
<td>0</td>
<td>NONIGNITE</td>
<td>STORCOND RESPONSE DETECT</td>
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</table>

**ABSTRACT**

A TUG TOWING A BARGE BACKED INTO AND RUPTURED A 10 inch PIPE CARRYING NATURAL GAS LIQUIDS. THE RESULTING EXPLOSION AND FIRE KILLED TWO PEOPLE, INJURED ONE AND EXTENSIVELY DAMAGED THE TUG, BARGE AND PIPELINE. THE PIPELINE WAS TOO CLOSE TO THE SURFACE.
**Major Hazard Incident Data Service (MIDAS)**

**Record** : 3518  
**Date** : 06/09/88  
**Place** : Maracaibo, Venezuela  
**Material Type** : LPG  
**Material Name** : LPG  
**Incident Type** : Control  
**General Causes : Impact**  
**Ignition Source** : Non-Ignite  
**Number Killed** : 22  
**Injured** : 0  
**Evacuated** : 0  
**Damaged** : 2  
**Tonnage** : 10  
**Quantity** : Tonnes  
**Damage$** : X 10E6  
**Time :** SECS FROM SPILL  
**Source** : NON-IGNITE  
**Keywords** : TANKER WITH 35000TE OIL ABOARD TRIED TO OVERTAKE & WAS IN CONTACT WITH OR HER SHIP INCURRING MINOR DAMAGE. TANKER THEN DROPPED ANCHOR RUPTURING LPG PIPELINE.

**Number of References** : 1  
**Coder** : ANL  
**Textfile** (Yes or No) : N
HER SHIP INCURRING MINOR DAMAGE.TANKER THEN DROPPED ANCHOR.RUPTURING LPG PIPELINE.

IGNITION KEYWORDS:
A GAS CYLINDER EXPLODED ON BOARD A CARGO SHIP.ENSURING FIRE SPREAD TO DRUM MED FUEL CARGO.23 CREW ABANDONED SHIP.VESSEL LATER BURNED OUT AND SANK.A 3mile OIL SLICK W AS PRODUCED.

NUMBER OF REFERENCES: 3 Coder :MZ
TEXTFILE (Yes or No): N
RECORD : 893
DATE : 30/08/79
PLACE : GOOD HOPE
MATERIAL TYPE : PLGAS
MATERIAL NAME : BUTANE
INCIDENT TYPE : INSTREL FIREBALL
ORIGIN : TRANSPORT BARGE
GENERAL CAUSES : IMPACT INSTRUMENT HUMAN
SPECIFIC CAUSES : SHIP/SHIP CONTROL PROCEDURES
QUANTITY : Tonnes
NUMBER KILLED : 12
NUMBER INJURED : 0
IGNITION SOURCE : AT TIME : SECS FROM SPILL
KEYWORDS : MAP PROGRESS ENQUIRY ADVICE COMBUST
ABSTRACT : NTSB INVESTIGATION.COLLISION OF CARGO VESSEL WITH LOADING BUTANE BARGE ON MISSISSIPPI RIVER.FIREBALL HUNDREDS OF FEET HIGH FOR 1 MINUTE.12 HOURS TO EXTINGUISH SECONDARY FIRES.

NUMBER OF REFERENCES : 2
TEXTFILE (Yes or No) : Y
CODER : BIP
RECORD : 1141
DATE : 12/10/85
PLACE : 145 MILES NW DUBAI
MATERIAL TYPE : RLGAS
MATERIAL NAME : LPG
GENERAL CAUSES : HUMAN EXTERNAL
SPECIFIC CAUSES : EXTNL/EXP SABOTAGE CONEXP
QUANTITY : Tonnes
NUMBER KILLED : 0
IGNITION SOURCE : AFT
KEYWORDS : AFTER DESIGN DURATION EXTENT PROGRESS
ABSTRACT : 140,200m³ LPG CARRIER "GAZ FOUNTAIN" ATTACKED & HIT BY 2 ROCKETS. ONE EXPLODED IN VOID SPACE ABOVE CARGO TANK, RUPTURING IT. GAS BURNT FOR 3 DAYS. OTHER TANKS NOT AFFECTED. SHIP EVENTUALLY TRANSFERRED. ALL 33 CREW SAVED.
NUMBER OF REFERENCES : 1
TEXTFILE (Yes or No) : N
CRED : KOD
DATE : 05/03/82
PLACE : MELBOURNE
MATERIAL TYPE : LPG
MATERIAL NAME : PROPANE
INCIDENT TYPE : RELEASE DENSE GCL
GENERAL CAUSES : HUMAN
NUMBER KILLED : 0
NUMBER INJURED : 0
IGNITION SOURCE : NON-IGNITE
KEYWORDS : INJURIES LEGALITY PUBLIC
ABSTRACT : SHIP DISCHARGED SEVERAL CLOUDS OF PROPANE CONTAMINATED WITH BUTADIENE DURING PURGING OPERATIONS INSIDE BAY. YELLOW CLOUD OF GAS SPREAD ACROSS AREA CAUSING EVACUATION & MINOR INJURIES. SHIP'S MASTER PROSECUTED UNDER MARINE ACT FOR GAS EMISSION.

NUMBER OF REFERENCES: 4
TEXTFILE (Yes or No): N

CODER : KOD
A tanker carrying 78000 tonnes of natural gas liquid broke free of its moorings during a storm, grounding near a port breakwater. The contents spread over 5 square kilometers and were released into the surrounding area. Gas processing plants were closed as a precautionary measure to prevent ignition of the vapor cloud.

**Number of References:** 2

**Keywords:** Weather, Area, Matprops, Response

**Abstract:** The tanker "Juan A. Lavalleja" carrying 78000 tonnes of natural gas liquid broke free of its moorings during a storm, grounding near a port breakwater. The contents spread over 5 square kilometers and were released into the surrounding area. Gas processing plants were closed as a precautionary measure to prevent ignition of the vapor cloud.
ABSTRACT: "SMALL DANISH LPG SHIP "RECITIZ THOLSTRUP" CARRYING 240TE OF BUTANE FROM MILFORD HAVEN TO LARNE DRIVEN ONTO ROCKS OUTSIDE LARNE HARBOUR. NO DAMAGE TO CARGO TANKS, BUTANE TRANSFERRED TO ROAD TANKERS AT 10te/hr. FEW NEARBY COTTAGES EVACUATED."
### Major Hazard Incident Data Service

**Record**: 1155  
**Contributor**: SRD  
**Date**: 28/12/79  
**Place**: Devon, UK  
**Material Type**: LPGAS  
**Material Name**: Butane  
**Material Code**: 1075  
**Origin**: Transport Ship  
**Incident Type**: External Fire  
**General Causes**: External  
**Specific Causes**: ExtnlFire  
**Ignition Source**: NonIgnite  
**Quantity**: 740 Tonnes  
**Damage $**: $10E6  
**Evacuated**: $10E3  
**Response Timing Duration**: SeCS From Spill  
**Keywords**: Response Timing Duration  

**Abstract**: Fire broke out in the living quarters on the Spanish LPG carrier "Butaseis". Crew abandoned ship which was then towed out to sea. Fire left to burn out after attempts by RAF to control it. The cargo was damaged.

**Number of References**: 1  
**Textfile (Yes or No)**: No  
**Coder**: BLP