



REPORT ON FIRE FIGHTING SERVICES
IN THE
FALKLAND ISLANDS

PART 2.

SECTION 14.

FIRE PREVENTION INSPECTION REPORTS.

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FIRE PREVENTION REPORT.

KING EDWARD MEMORIAL HOSPITAL.

1. BRIEF DESCRIPTION.

The original building was opened in 1914 and extended in 1953. Part two storey part single storey with a semi-basement. Walls part brick part timber, floors part timber part concrete, roof part steel sheeting on timber trussing, part felt tile on timber trussing part concrete. Fibre board on timber studding is used extensively in the older part of the premises for internal partitioning. Size approximately 120 ft by 200 ft.

2. MEANS OF ESCAPE.

The means of escape are not to a satisfactory standard. There is no internal separation either horizontally or vertically of fire resisting construction. A fire in any section of the main hospital could quickly spread isolating patients from escape routes. The construction of the older section presents considerable risk to patients and staff in that a fire could occur, be undetected for a considerable period of time, and subsequently show itself when it was at an advanced stage.

There is no fire resisting separation between high risk areas and circulation and ward areas.

To achieve a reasonable standard the following should be implemented:-

2.1. Churchill Wing.

- 2.1.1. Provide fire resisting self closing doors and screens in the following locations:-

Main Entrance corridor to Churchill Wing.
Doors to XRay and Operating Theatre.
Main Entrance corridor adjacent operating theatre preparation room.
Churchill wing corridor adjacent Duty Room.
Churchill wing corridor adjacent Store Room.
Door to Stores (3) Churchill Wing.
Door to Staff Dining Room.
Doors to kitchen.
Doors to Maternity entrance Hallway.
Across Main corridor adjacent Maids' Sitting Room.
Door to Stairway to semi-basement.
Door to main electrical intake Room.

Door to Heating Chamber (one hour standard of fire resistance).

Door to Social Worker's Office.

Door to Maids' Sitting Room.

- 2.1.2. Glazing within corridor walls from the Maids' Sitting Room and Staff Dining Room should be replaced by fire resisting glazing.

2.2. Older Wing.

2.2.1. First Floor.

The internal stairway exit from the first floor is unsatisfactory in that there is no internal protection. The internal stairway enclosure should be lined with fire resisting material at first floor level and enclosed by a half hour fire resisting self closing door.

- 2.2.2. The roof void areas at first floor level to be cleared of all combustible material and kept locked.
- 2.2.3. The exit to the external stairway to be fitted with an automatic panic type release bar. A security alarm can be fitted to this door if necessary.
- 2.2.4. The void walls should be lined internally with fire resisting materials from floor level to the underside of the roof.

2.3. Ground Floor.

- 2.3.1. The general arrangements of this section present unusually difficult problems in that high risk areas are located within a ward area and there is no internal separation since walls are mainly of fibre board and timber construction.
- 2.3.2. The following rooms should have their internal fibre board walls lined internally with fire resisting material, glazing within corridor walls of the partitions replaced by fire resisting glazing and the doors made fire resisting and self closing.

Laboratory.

Day Room.

Kitchen.

Maids' Sitting Room.

Sitting Room.

Stores.

- 2.3.3. A fire resisting door and screen should be positioned across the corridor adjacent the sitting room.

2.4. General.

- 2.4.1. Consideration should be given to increasing the width of ward doors to allow the easy movement of beds and stretchers.
- 2.4.2. Ducts between floors should be lined with fire resisting material and the hatch made to a similar standard.
- 2.4.3. All combustible storage should be removed from the internal stairway enclosure in the Churchill Wing and the Main Electrical Intake Room.
- 2.4.4. All stores should be kept locked shut except when in use.
- 2.4.5. All exit doors to open should be made freely available without recourse to the use of keys.
- 2.4.6. The cleaning cupboard should be removed from the corridor near the kitchen.

3. Flammable Liquids and Medical Gases.

There are large quantities of flammable liquids and medical gas cylinders located in various locations throughout the hospital. A suitable separate store building should be provided divided into two separate sections each having access from the open air and all bulk supplies should be kept in this building. Within each laboratory/dispensary and similar rooms where flammable liquids are required daily a suitable fire resisting cupboard should be provided for the storage of small supplies of flammable liquids.

4. OPERATING THEATRE.

Ether anaesthetic is still used within the operating theatre and this presents particular hazards of explosion due to static electricity. It is understood that certain electrical equipment is shortly to be replaced by approved theatre equipment and this will considerably reduce the risk. Comprehensive guidance is given in Hospital Technical Memorandum regarding antistatic precautions and in the report of a Working Party on anaesthetic Explosions and additional guidance is given in the attached note.

5. FIRE ROUTINE.

A suitable fire routine should be formulated.

6. EMERGENCY LIGHTING.

A system of emergency lighting should be installed within the Hospital capable of illuminating all exit routes and ward areas. It is understood a standby generator is being installed to cater for the Operating Theatre requirements and it may be possible to utilize this supply for an emergency lighting system.

7. FIRE ALARM SYSTEM.

An electrical fire alarm system should be installed with manual operating points and automatic detectors located in risk areas. The installation should comply with British Standard CP 1019: 1972 and include provision for a direct link and visual alarm at the Telephone Exchange.

8. FIRE EQUIPMENT.

- 8.1. The scale of fire equipment requires increasing: 11 2 gallon water type, 7 dry powder type and 3 carbon dioxide type.
- 8.2. There should also be adequate provision of sand in laboratories/dispensary and Boiler Room (2 buckets of dry sand in each).
- 8.3. A fire blanket should be provided in the Kitchen and dental workshop.

9. GAS INSTALLATION.

Liquefied Petroleum gas is used within the hospital for supplying one heater and a number of bunsen burners. The risks and potential dangers of LPG are such that cylinders should never be allowed into the Hospital. The supply should always be outside and a fixed installation complying to British Standard Code of Practice 338 provided. Flexible piping is susceptible to damage and requires frequent examination.

10. ELECTRICAL INSTALLATION.

- 10.1. The electrical installation within the hospital was found to be suspect in one or two locations. The installation should be inspected thoroughly and renewed as necessary preferably by utilizing metal sheathed cable particularly in the timber section of the hospital.
- 10.2. It was also noted that major supply cables are resting directly on the floor joists in the roof voids of the timber section. These cables should be carried within suitable trunking.
- 10.3. The isolation switches for cookers should be positioned so that they may easily be reached in the event of fire.

11. HEATING.

- 11.1. The system, a low pressure hot water, is the most satisfactory method within a hospital. One or two portable electric fires were also noted. The main boiler and oil tank does not comply with guidance of British Standard CP 8002.
- 11.2. Portable electric fires are not suitable for hospital use. Where used in office accommodation they should be guarded by an approved British Standard Guard.
- 11.3. The duct from the heating chamber leading to the service duct beneath the hospital should be infilled with fire resisting material.
- 11.4. All combustible materials should be removed from the heating chamber and a brick wall erected between the boilers and the remainder of the chamber which is used as a general work area. The access door to the new boiler room should preferably be located so that access is gained direct from outside. There should be a suitable sill placed across the door threshold to prevent the outflow of oil.
- 11.5. The fusible link fitted on the boiler should be run over brass pulleys having a minimum diameter of $1\frac{1}{2}$ inches and the weighted valve should be located outside the Boiler Room near the tank outlet. A manual release should be provided adjacent the boiler room exit.
- 11.6. Glazing within the boiler room should be $\frac{1}{2}$ inch georgian wired in frames fixed shut.
- 11.7. Air required for combustion should be obtained via a suitable opening in the external wall which has a fire metal mesh placed internally to prevent the spread of flames.
- 11.8. The oil storage tank should be totally enclosed by erecting a brick wall across the existing open face and filling the vents with brick.
- 11.9. The inside of the compartment should be lined internally with an oil proof bonding to form a catchment area.
- 11.10. The access door to the tank chamber should be $\frac{1}{2}$ inch mild steel plate.
- 11.11. A suitable filling point should be provided together with a contents gauge which can be seen by the delivery driver or an overfill alarm device should be fitted.

Appendix

MINISTRY OF HEALTH

Fires and Explosions in Operating Theatres and Anaesthetic Rooms

WARNING NOTICE

Inflammable anaesthetic agents such as ether, cyclopropane and ethyl chloride when mixed with air, oxygen or nitrous oxide may form explosive mixtures, and the ignition of such anaesthetic vapours has resulted in explosions which have been attended by serious consequences. The chief causes of such ignitions are:—

- (a) Electrostatic spark discharge. This is more likely to occur during dry atmospheric conditions and in particular during the early part of a session when conditions tend to be driest.
- (b) Sparking at electrical contacts, diathermy electrodes, etc.
- (c) Use of apparatus incorporating hot surfaces, e.g. cautery, electric heaters, overheated lamps.
- (d) Gas or spirit burners.

Whenever an explosive mixture is in use the surgeon and the theatre sister should be aware of the fact.

Precautions and Recommendations

1. Anti-Static Precautions

The best means of reducing electrostatic risks is to eliminate the use of materials which readily electrify in normal use. The chief sources of static electricity are insulating rubber, plastics, wool, nylon and acetate rayon. Experience suggests that nonconducting rubber breathing equipment on anaesthetic apparatus constitutes the greatest risk. Materials which are anti-static for practical purposes are available, e.g. anti-static rubber, anti-static rubber-proofed fabrics, linen, cotton and viscose rayon, and should be used whenever possible instead of the electrostatic materials.

Recommended anti-static precautionary measures:—

- (a) Rubberised anaesthetic breathing equipment and rubber tubing used with suction apparatus, etc., should have permanent anti-static properties or be damped internally and externally before use, preferably with water containing a wetting agent such as soap or a detergent.
- (b) Operating tables, anaesthetic apparatus, patients' and other trolleys, stools, etc., should be in effective electrical contact with the floor preferably by means of metal or anti-static rubber-tired castors or feet. Where there are not provided the apparatus should be equipped with an effective type of trailing chain, e.g. a looped type with a long floor-contact surface. The metal work of anaesthetic and other apparatus should be electrically continuous, and top surfaces and shelves should be free from paint or other insulating finish.
- (c) Rubber pads on operating tables, trolleys or stools should have permanent anti-static properties or be completely enclosed in an anti-static fabric, e.g. cotton, linen or viscose rayon.
- (d) All persons entering an anaesthetising location should wear anti-static footwear and a reasonably close-fitting outer garment of an anti-static fabric. Anti-static rubber-soled footwear is considered preferable. Leather-soled footwear provides reasonable protection but other types should be enclosed in overboots of an anti-static fabric.
- (e) Terrazzo, quarry tile and similar floors having a cement base are usually satisfactory for anti-static purposes. Floors of ordinary rubber or p.v.c., linoleum, asphalt, or wax are electrically insulating and are unsuitable for anti-static purposes when dry. Moisture applied to the surface of such floors will render them temporarily anti-static.

It is advisable to damp them immediately prior to the use of inflammable anaesthetics either by the direct application of water containing a wetting agent such as a detergent or soap or by laying a damp sheet on the floor. The damp area should extend around the anaesthetic apparatus sufficiently to prevent persons touching any part of the apparatus unless they are standing on the wetted area or sheet.

Electrical Apparatus

Switch contacts and other parts of apparatus capable of producing an incendive spark should be housed in a gas-tight enclosure or spaced at least 6 feet horizontally from any anaesthetic apparatus.

The maximum voltage of circuits used for energising endoscopes, etc., should be as low as is practicable and not appreciably higher than the rated voltage of the lamps. The provision of a special current limiting resistance in the circuit will greatly reduce the spark and overheating risks. Dry-cell batteries are safer than mains transformers for operating endoscopes.

Electrically operated suction apparatus should have no sparking contacts which are open to atmosphere, and the exhaust outlet from the pump should terminate outside any enclosure housing the apparatus.

From the electrical safety aspect surgical tools operated by means of compressed air are considered preferable to electrically operated tools, because of the inherent spark and electric shock risks associated with the latter.

Flexible cables should be free from joints, frequently inspected, and renewed when damaged or showing signs of deterioration.

The risks associated with diathermy and cautery apparatus are obvious. Before these are used following the administration of inflammable anaesthetics a non-inflammable gas should be passed through the breathing circuit until no explosive residue remains either in the apparatus or in the patient's lungs. The ether bottle should be removed and if it must be replaced it should be washed out and left uncorked. It is not sufficient to rely on the closure of the ether tap as this may not be gastight.

Open Flames and Heated Surfaces

Apparatus incorporating open flame burners or heated surfaces which may operate at temperatures of 350°F. or more can constitute an ignition risk if located within 20 feet of anaesthetising position. Doors between the anaesthetising position and the ignition risk should not be regarded as a reliable safeguard, as they may be left open.

5.—Spirit lotions, etc. It should be noted that the use of spirit, spirit lotions and other similar solutions which are frequently employed for cleansing the patient's skin, etc., involves dangers similar to those mentioned above.

Additional information on the risks referred to above, together with recommended precautions against associated risks, are contained in "Safety Code for Equipment used in conjunction with Explosive Anaesthetics" (see IEM (55) 50).

FIRE PREVENTION REPORT.

DARWIN BOARDING SCHOOL.

1. BRIEF DESCRIPTION.

'Y' shaped two storey, walls and floors timber, roof corrugated metal sheeting on timber truss. Approximately 60 ft by 30 ft on each wing. The school is used by both boarders and day school pupils. During the day 60 children may be present whilst at night this is reduced to about 40. Ages of pupils vary from 5-15 during the day but usually 8-15 at night.

At least 4 adults are present at night but there are generally about 10 present during the day and part of the evening.

The ground floor is generally utilised for teaching, dining, kitchens and ancillary accommodation whilst the first floor has two accommodation wings for children and one for staff.

2. MEANS OF ESCAPE.

The standard of means of escape is unsatisfactory. The building has little internal sub-division and a fire on the ground floor could quickly spread smoke and heat into the childrens' first floor accommodation.

Two escape chutes are provided but to reach them the children would have to enter an unprotected corridor.

2.1.1. To achieve a reasonable standard the following should be implemented:-

Ground Floor.

The following doors to be made fire resisting and self closing:-

Door to Staff Room.

Door to Staff Stairway.

Doors to Kitchen Wash Area.

Doors to Stairway Stores.

Door to Electric Room.

Door to Laundry.

Door to Staff Bedroom.

Door to Classroom adjacent Staff Room.

2.1.2. Partitions associated with the above doors to be fire resisting unless constructed in accordance with the attached sketch which details the general construction elements of the building and which will provide 30 minutes fire resistance.

- 2.1.3. Additional fire resisting self closing doors to be provided as follows:-

Across corridor adjacent stairway stores.

Across corridor adjacent electrical room and classroom next to Staff Room.

- 2.1.4. The boiler room should be lined internally except where of brick construction to provide one hours fire resistance.
- 2.1.5. Storage under the floor should be entirely non-combustible and there should be no storage within the stairway enclosures, i.e. under landings.
- 2.1.6. Where there is storage within toilet accommodation the doors to the toilets should be made fire resisting,
- 2.1.7. The window from the maids bedroom should be made easily openable from within and conspicuously indicated 'FIRE EXIT'.
- 2.1.8. The central stairway should have a suitable handrail.
- 2.1.9. The duct from the boiler room and kitchen to first floor should be sealed with fire resisting material where it passes through the wall and ceiling.

2.2.1. First Floor.

The following doors to be made fire resisting and self closing:-

Doors from Staff accommodation to central stairway landing.

Doors from Staff accommodation to central corridor.

Door to Staff Stairway.

Door to Linen Store.

Doors across corridor to childrens' wings.

Doors to Sitting Room and Classroom within stairway enclosures.

- 2.2.2. Additional fire resisting self closing doors should be provided across the corridors adjacent the stairways from the childrens' wings.

2.3. Roof Space.

The roof space should not be used for the storage of combustible materials.

- 2.3.1. The roof space should be sub-divided by fire resisting partitioning with suitable access hatches at the following locations:-

Directly above the dormitory classroom partition near the central stairway.

Directly above the staff accommodation partition near the central stairway.

- 2.3.2. The boiler room duct should be sealed where it passes through the ceiling.

3. FIRE ALARM.

- 3.1. The existing fire alarm, whilst suitable for a daytime occupancy is not considered satisfactory for a sleeping risk building.
- 3.2. The system should include automatic detection of the smoke and heat type.
- 3.3. The system which should be in accordance with British Standard CP 1019: 1972 should also include an electrically operated siren designed to operate simultaneously with the fire alarm for the purpose of summoning assistance from Goose Green.

4. FIRE EQUIPMENT.

The portable equipment provided is considered suitable and adequate for tackling incipient fires by the staff.

5. FIRE ROUTINE.

A simple fire routine is established and this should be extended to include the following:-

A drill to be held at least once in every three months and occasionally held during the sleeping hours.

All staff to be trained to use portable fire appliances.

A basic night time check to be made to ensure that all smoking materials are safely extinguished, unnecessary electrical equipment turned off, all doors are closed, handlamps are working and in position etc.

The absolute priority for staff is the safety of the children and effective means must be made to ensure that all children are accounted for. It is also useful to ensure that children put on a dressing gown and slippers before leaving or pull a blanket from their bed and that the older children assist the young ones and ensure everyone in the room is awake.

6. EMERGENCY LIGHTING.

- 6.1. Handlamps are provided but at the time of the inspection none were found to be working. Lighting is essential for safe evacuation particularly over stairways and exit chutes.

- 6.2. In view of the occupancy a battery system of emergency lighting should be considered either working from a central supply or by individual self contained lighting units.

7. ELECTRICAL INSTALLATION.

- 7.1. The electrical installation requires attention in a number of locations and should be examined and repaired/renewed as necessary.
- 7.2. The storage of combustible material including floor sweepings and cigarette ends within the electrical room should cease.

8. OIL INSTALLATIONS.

- 8.1. There is a leak of oil within the boiler house which requires attention.
- 8.2. The disused fuel pipeline to the Caretaker's workshop should be permanently disconnected.
- 8.3. The fusible link should be extended to include a manual isolating valve.
- 8.4. The diesel stock tanks should be effectively banded.
- 8.5. There is a leak of oil within the generator shed which requires attention and also a slight leak on the kitchen burner unit.
- 8.6. The fuel supply to the generators should include a remote manual isolating valve which does not require entry into the building.

9. GENERAL.

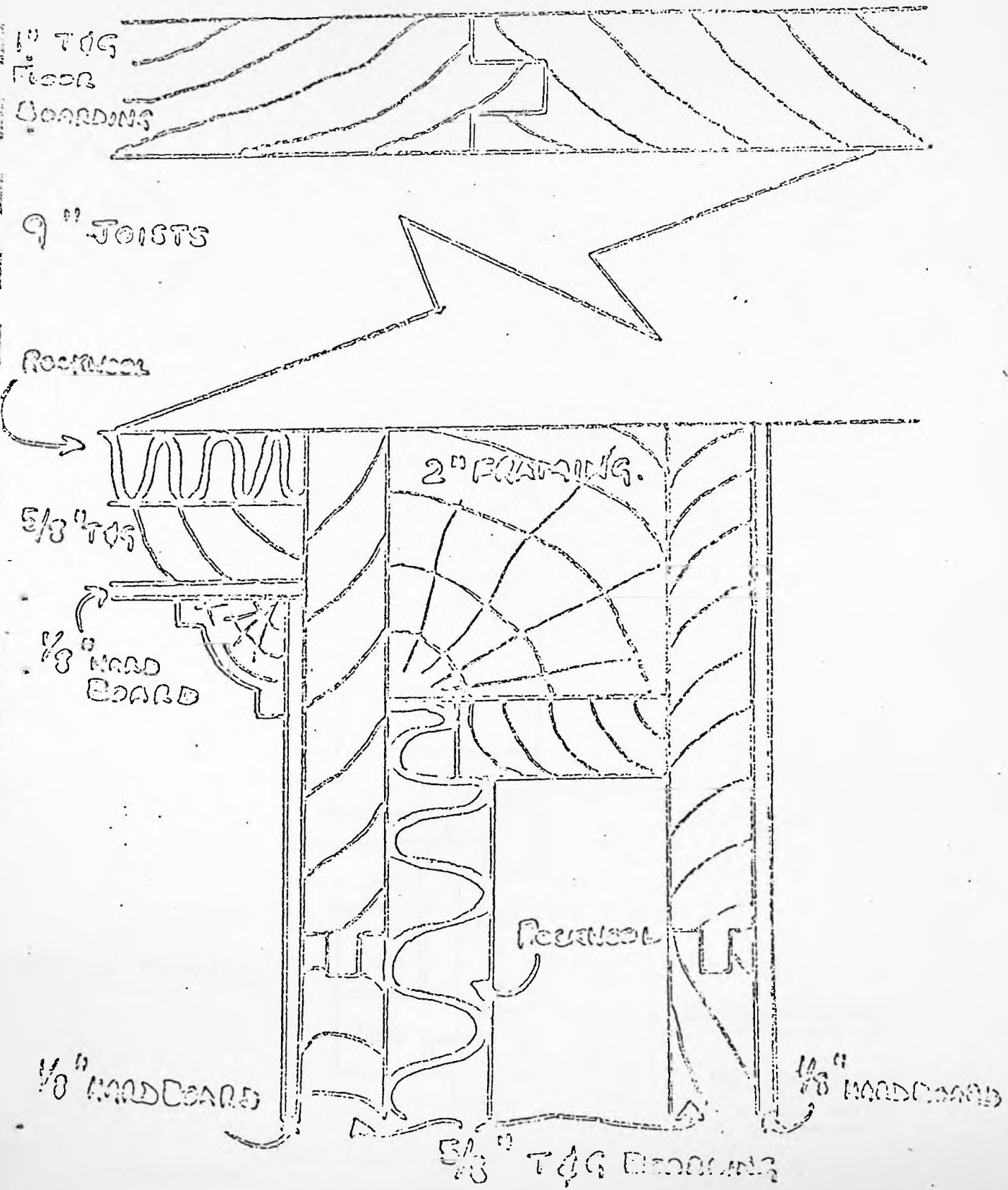
- 9.1. The drying rail immediately above the cooking range should be removed.
- 9.2. Rubbish, including the contents of ashtrays, should not remain in the building but be removed outside to a safe place.
- 9.3. Flammable liquids e.g. methalated spirits should not be kept in the general store.

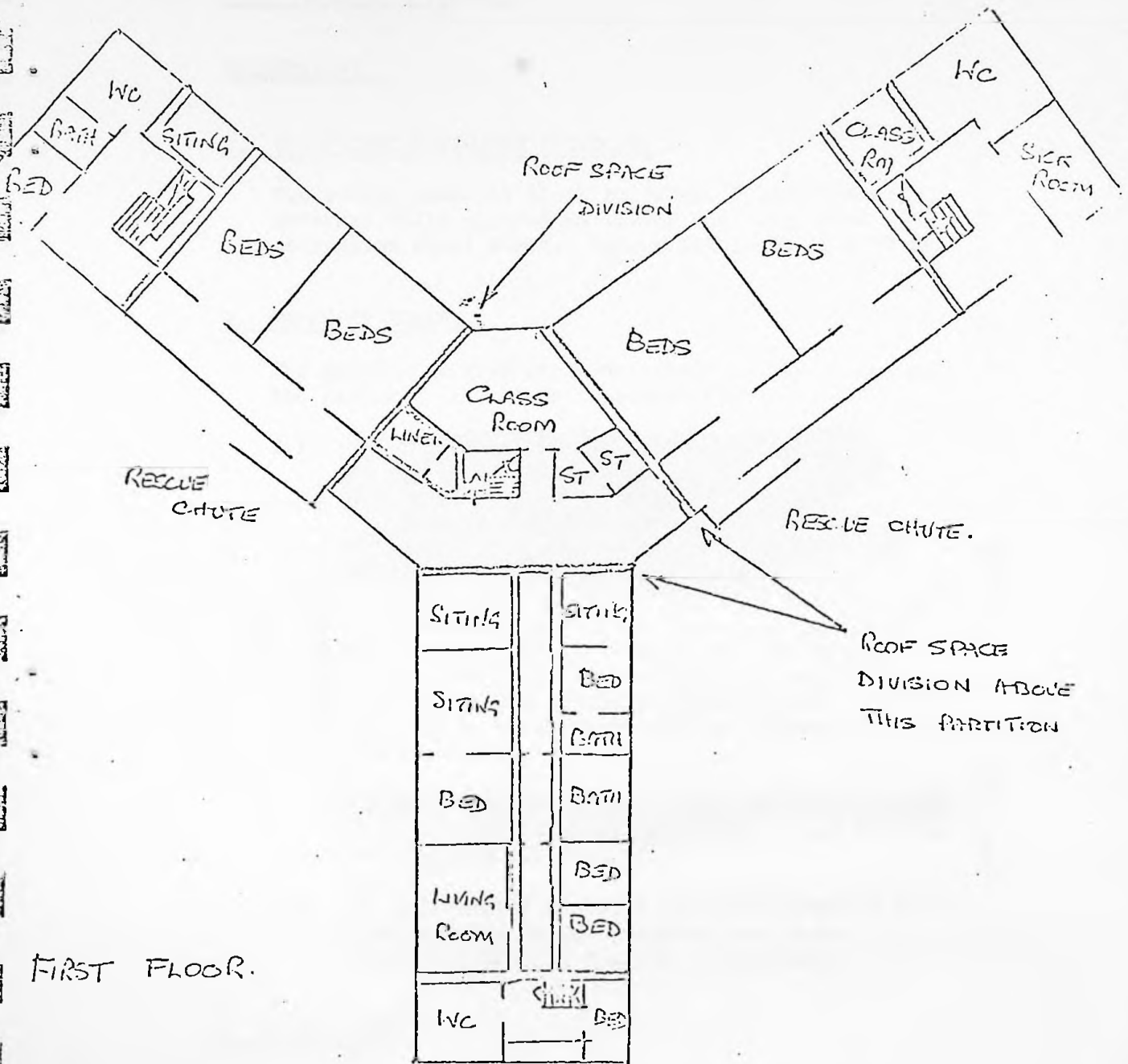
10. FIRE FIGHTING ARRANGEMENTS.

- 10.1. The risk of fire to the building is high due to its construction and staff would not be able to tackle more than a small fire in the early stages since their major concern must be the safety of the children. Assistance for major fire fighting would, therefore, rest on the settlement of Goose Green.

- 10.2. At the time of the visit the fire pump at Goose Green was stripped for repair and it was, therefore, not possible to examine it in detail. The pump was trailer mounted but would take considerable time to bring into action at the school and its effectiveness appears limited. Hose and ancillary equipment was not of a high standard.
- 10.3. Consideration should be given to the provision of a new portable pump with an output of 500 gpm for use both at the settlement and school.
- 10.4. There should be easy access made to the beach near the school to allow a vehicle to rapidly place the pump in a suitable pumping position and to enable the supply to reach the school quickly. Consideration be given to a suitable pipeline, laid from the pumping position to the school with suitable adaptors fitted for hose connection.
- 10.5. Hose together with ancillary equipment sufficient to reach all parts of the building should be supplied and located at a convenient position near the pipeline outlet.
- 10.6. The maintenance and normal location of the pump should be Goose Green where it will be of benefit to the settlement.
- 10.7. The settlement should liaise with Stanley Fire Brigade to ensure equipment is maintained to a high standard and that maximum benefit is derived from the equipment provided.

FLOOR & WALL CONSTRUCTION.





FIRST FLOOR.

DARWIN SCHOOL

NOT TO SCALE

RECOMMENDED FIRE RESISTING
CONSTRUCTION OF DOORS

ANITA 1977

FIRE PREVENTION REPORT.

SECRETARIAT.

1. BRIEF DESCRIPTION OF BUILDING.

Two storey concrete block building, floors timber, internal walls plywood on timber sheeting, roof corrugated steel sheet. Approximately 30 ft x 50 ft.

2. MEANS OF ESCAPE.

The means of escape are considered unsatisfactory and the following should be implemented:-

- 2.1. The internal stairway to be protected by enclosing this at ground floor level with fire resisting construction. A screen with a half hour fire resisting door to be provided across the rear of the entrance lobby to form a stairway enclosure. The two open sections of the stairway banister to be infilled with fire resisting material. The internal wall to the Income Tax Office to be lined with fire resisting materials. The door to the Treasury Office to be replaced by a half hour fire resisting self closing door.
- 2.2. All exits from the ground floor offices to open to be made immediately available during the time the premises are occupied.
- 2.3. All combustible material should be removed from corridors and no combustibles are to be allowed within the stairway enclosure.

3. FIRE ALARM.

A simple electrical fire alarm to be provided. The alarm to be clearly audible throughout the building with operating points of the break glass type located adjacent the exits to open at ground level.

4. FIRE FIGHTING EQUIPMENT.

The standard and location of equipment is considered adequate. Extinguishers should be wall mounted.

5. HEATING.

Portable electric fires are not guarded in accordance with modern British Standards. Adequate guards should be provided.

6. ELECTRICAL INSTALLATION.

The electrical installation whilst apparently in good condition requires attention in the following areas:-

- 6.1. The main electrical intake room should be indicated.
- 6.2. The lining of this room should be non-combustible.
- 6.3. The main electrical intake duct should be filled with sand.
- 6.4. Electric lamps should be protected in those locations in which they may come into contact with combustibles.

7. VAULTS AND ARCHIVES.

The vault and archives were inspected and it is considered that dependant upon the value of documents within these areas the following should be implemented:-

- 7.1. ARCHIVES. The construction of the building would not provide any degree of protection for the documents contained within this area. Consideration should be given to providing a smoke detector within this room linked into the building fire alarm system. A direct line could be provided from the building to the continuously manned telephone exchange for transmission of fire alarm calls. A strict 'NO SMOKING' ban should be imposed within this area.

Documents of value should be wrapped in a plastic or waterproof cover to reduce possible damage from water used for fire fighting.

Selected documents could be placed in the Vault.

- 7.2. VAULTS. One vault should be made reasonably secure against fire by implementing the following:-

Holes in the ceiling to be infilled with concrete.

Timber racking replaced with steel.

Floor made good with concrete to provide a cill on floor level at least one inch higher than the outside floor.

All electrical apparatus to be removed from the vault and all openings sealed with concrete.

A trailing lead with its connection outside the vault door to be used for lighting or fully enclosed fittings with MIC cable used within the vault.

8. FIRE ROUTINE.

A simple routine has been established.

FIRE PREVENTION REPORT.

GOVERNMENT HOUSE.

1. BRIEF DESCRIPTION.

An irregular shaped building. Part 3, 2 and single storey, walls brick part stone part wood, floors part concrete part wood, roof corrugated steel sheets on timber trussing. Approximately 60 ft by 60 ft.

2. MEANS OF ESCAPE.

- 2.1. The rebates to the following doors to be increased to a minimum of 1 inch:-
 - Door from Office accommodation to House.
 - Door to Drawing Room.
 - Door to corridor at foot of Private Stairway.
 - Door to corridor at foot of Guest's Stairway.
 - Doors (2) from kitchen to Dining Room and Guest's corridor.
 - Door to Staff Bedrooms from link passage.
 - Door to attic from Guest's Stairway.
- 2.2. The doors from the kitchen to Dining Room and Guest's corridor and the door from the Office accommodation should also be lined with fire resisting material on the risk side and made self closing.
- 2.3. The door to the Staff Bedroom block should also be self closing.
- 2.4. The glazing in the door at the foot of the Guest Stairway should be replaced by $\frac{1}{2}$ inch wired glazing.
- 2.5. The understair store in the Dining Room should not be used for storage of combustible materials.
- 2.6. One of the windows from the Ground Floor of the Staff block should be modified to form an escape door or the window from each room made openable to permit escape.

3. HEATING.

3.1. Staff Bedroom Boiler Room.

- 3.1.1. The ceiling to the heating chamber requires underdrawing with fire resisting material.

3.1.2. The fusible link requires attention.

3.2. Main Boiler Room.

3.2.1. The ceiling to the heating chamber requires underdrawing with fire resisting material to protect the exposed timber.

3.2.2. The under floor ducts should be sealed with brickwork or $\frac{1}{2}$ inch mild steel hatches.

3.2.3. The fusible link requires attention.

3.2.4. The door to the Conservatory should be made fire resisting.

3.2.5. The main oil tank requires a suitable bund.

3.2.6. A drip tray should be provided beneath the burner unit.

3.2.7. The existing 4.4lbs dry powder extinguisher should be replaced by 1 x 15lbs of similar type.

4. STORAGE.

4.1. The combustible storage within the attic and basements should be removed to outside the main building and all wiring within these areas subjected to a thorough examination by a competent person.

4.2. The basement area should be sub-divided into small sections wherever possible by infilling with brickwork any holes or constructing suitable $\frac{1}{2}$ inch mild steel hatches.

FIRE PREVENTION REPORT.

PUBLIC WORKS DEPARTMENT.

The site contains a number of separate buildings.

1.1. OFFICE.

Two storey concrete block walls. Ground floor concrete, first floor timber, corrugated metal roof on timber truss. Approximately 40 ft by 30 ft.

1.2. MEANS OF ESCAPE.

A handrail should be provided on the open side of the stairway to the first floor.

2.1. PAINT SHOP.

Two storey, corrugated metal roof and walls on timber truss, ground floor concrete, first floor timber. Approximately 30 ft by 15 ft.

2.2. MEANS OF ESCAPE.

2.2.1. The use of an open fire and electric radiant heaters should cease. Low pressure hot water from the central store being more suitable.

2.2.2. The highly flammable liquids in daily use should be kept in a suitable cupboard or bin.

2.2.3. This workshop is unsuitable for using cellulose paints.

2.2.4. A suitable exit hatch should be provided from the Block Shop messroom direct to open.

2.3. FIRE EQUIPMENT.

A bucket of sand and 1 x 4.4 lb dry powder extinguisher should be provided.

3.1. CENTRAL STORE.

Part 3 and part single storey, oak shingle, and corrugated metal walls, corrugated metal roof, ground floor concrete, first and second floors timber. Approximately 70 ft by 40 ft.

3.2. MEANS OF ESCAPE.

3.2.1. A suitable external exit stairway should be provided from the South end of the main store at each level descending to ground level.

3.2.2. The existing exits from the ground floor both north and south should be made freely available from within.

3.2.3. The flammable liquids should be resited outside the building in a separate highly flammable liquid store building.

3.2.4. Oxygen and Acetylene Cylinders should not be stored within the building.

3.2.5. Electric lamps should be protected from coming into contact with combustible materials.

3.3. GENERAL FIRE EQUIPMENT.

There should be 2 x 2 gallon water extinguishers at each level.

4.1. COLD STORE.

Single storey, corrugated metal walls and roof, concrete floor. Approximately 20 ft by 15 ft.

4.2. MEANS OF ESCAPE.

The flammable liquids should be resited outside the building in a separate highly flammable liquid store building.

5.1. SMITHY.

Single storey, stone walls, corrugated metal roof, concrete floor. Approximately 20 ft by 40 ft.

5.2. GENERAL.

The forge backplate is in poor condition and requires renewing. There are large quantities of combustibles in the rear of the forge and these should be removed.

6.1. PLUMBERS SHOP.

Single storey corrugated metal walls and roof, wooden floor. Approximately 20 ft by 10 ft.

6.2. GENERAL.

The quantity of flammable liquids used should be kept to the minimum in secure metal containers.

6.3. FIRE EQUIPMENT.

6.3.1. A bucket of dry sand should be provided.

6.3.2. The oil fired boiler does not appear to conform to normal safety standard e.g. fire valve.

7.1. PETROLEUM STORE/DIESEL STORE.

Single storey - concrete block walls, corrugated metal roof, concrete floor. Approximately 20 ft by 10 ft.

7.2. DIESEL STORE.

GENERAL.

- 7.2.1. Serious consideration should be given to the provision of a diesel pump for fueling vehicles.
- 7.2.2. The lighting within the store should be of the fully enclosed type.
- 7.2.3. The separation wall should be continued to the underside of the roof.
- 7.2.4. There should be adequate high and low ventilation.
- 7.2.5. A suitable ^{non-}combustible threshold should be provided.

7.3. FIRE EQUIPMENT.

The existing extinguisher to be replaced by 1 x 15 lbs dry powder extinguisher and 2 buckets of dry sand to be provided. (See guidance of Flammable Liquid Store.)

7.4. PETROLEUM STORE.

GENERAL.

- 7.4.1. The store to be ventilated at high and low level.
- 7.4.2. A suitable 6 inch high non combustible threshold should be provided.
- 7.4.3. Only petroleum may be kept in the store to a maximum of 100 gallons,
- 7.4.4. All electrical equipment and its installation within the defined areas of dangers in accordance with the principles of construction to be either certified flame-proof, intrinsically safe or other approved apparatus. The existing equipment is totally unsuitable and should be disconnected until approved equipment is installed.

7.5. FIRE EQUIPMENT.

The existing extinguisher to be replaced by 1 x 15 lbs dry powder extinguisher and 2 buckets of dry sand to be provided. (See guidance of Flammable Liquid Store.)

8.1. GARAGE STORE.

Single storey, stone walls, corrugated metal roof, concrete floor. Approximately 15 ft by 10 ft.

8.2. GENERAL.

- 8.2.1. It is suggested that this building be modified to form a highly flammable liquids store to contain the liquids dispersed around the public works site. The store should be modified in accordance with the guidance given with particular emphasis on fire separation and electrical equipment.

8.2.2. The building should not be used to contain petroleum spirit even when modified since large quantities cannot be accommodated safely on this site.

9.1. GARAGE.

Single storey, part wooden part corrugated metal walls, corrugated metal roof, concrete floor. Approximately 40 ft by 80 ft.

9.2. MEANS OF ESCAPE.

9.2.1. An additional exit to be provided direct to open from the west end of the workshop.

9.2.2. Spare acetylene and oxygen cylinders to be removed outside the building.

9.2.3. The charging of batteries is dangerous due to hydrogen gas within the workshop. A separate safe, well ventilated location should be found for this purpose.

9.2.4. The paraffin wash tray should be resited away from the workshop exit.

9.3. HEATING/GENERAL.

9.3.1. The chimney flue from the workshop requires attention.

9.3.2. Fuel tanks should not be drained within workshop pits without special provision of safety handlamps, and pit exit.

9.4. FIRE EQUIPMENT.

The two 4.4 lb dry powder extinguishers should be replaced by 2 x 15 lbs extinguishers of the same type and there should be adequate provision of dry sand.

10.1. BLOCK SHOP.

Single Storey, corrugated metal walls and roof, floor concrete. Approximately 60 ft by 40 ft. The shop contains a mess room beneath the Paintshop.

10.2. GENERAL.

The ceiling beneath the paint shop should be fire resisting.

10.3. MEANS OF ESCAPE.

Additional exit to be provided from the Mess Room direct to open.

10.4. HEATING.

The oil storage tank and boiler to be enclosed by fire resisting construction as detailed in the guidance notes. Particular attention to be given to the effective provision of fire valve and fusible link.

10.5. FIRE EQUIPMENT.

A 15 lbs dry powder extinguisher and 2 buckets of dry sand to be provided.

11.1. TIMBER STORE.

Single storey, timber floor, corrugated metal roof, timber walls. Approximately 40 ft by 15 ft.

11.2. GENERAL.

The access hatch beneath the floor from outside should be sealed to prevent an accumulation of rubbish.

12.1. CARPENTERS SHOP.

Single storey, corrugated metal walls and roof, floor part concrete part timber. Approximately 50 ft by 65 ft.

12.2. GENERAL.

12.2.1. The electric fire within the mess room should be replaced by an enclosed unit.

12.2.2. Smoking should not be permitted within the work area due to the danger of cigarette ends in sweepings.

12.2.3. The mess room should be enclosed by fire resisting materials if smoking within this workshop is to be permitted.

12.3. HEATING.

12.3.1. The oil fired installation is showing signs of burnt ash in the blower duct due to the entry of sawdust into the burner air duct. Air for combustion should be taken direct from outside the building. The burner unit should be enclosed and the unit switched off when the premises are unoccupied. A fusiblelink should be installed.

12.3.2. The oil storage tank should be position within a bund, or catchpit drain arrangement.

12.3.3. Sawdust shavings and sweepings should be removed from the workshop daily.

12.4. FIRE EQUIPMENT.

One of the two water extinguishers provided should be resited so that there is an extinguisher adjacent each exit.

13. STORAGE OF OXYGEN AND ACETYLENE CYLINDERS.

- 13.1. A suitable enclosure should be provided for spare acetylene and oxygen cylinders. The enclosure which should be of the metal cage type should be placed on a concrete base in a safe place.
- 13.2. There should be a suitable corrugated metal roof to protect cylinders. There should be no smoking within 20 ft of the cylinders and a suitable cautionary notice should be displayed.

14. BULK PETROLEUM STORE.

- 14.1. The single storey building at present used to hold the bulk stock of petroleum spirit is not considered suitable since a major electrical distribution transformer is located within the same building and is not separated by fire resisting construction. Similarly part of the building is used as a store for aircraft parts.
- 14.2. Bulk storage should be in accordance with the model code referred to earlier and adequate provision should be made for means of escape and firefighting.

FIRE PREVENTION REPORT.

1. GOVERNMENT JETTY

The Government Jetty consists of a timber structure built over and onto an old wooden shipwreck 'MARGARET'. There is a single storey building approximately 60 ft by 20 ft used as an office for the Falkland Islands Government Air Service and for ships chandlery. The risk of fire on the jetty is high and serious consideration should be given to providing other accommodation perhaps within the yard of the Public Works Department and keeping the Jetty clear of all storage and office personnel.

2. GENERAL.

2.1. The following points were noted.

- Large storage of acetylene gas.
- Battery charging.
- Storage of and use of flammable liquids.
- Smoking is not prohibited.
- Use of Jetty by petrol driven vehicles.
- Defective wiring and equipment unsuitable for flammable vapour areas.
- Open peat fire.
- Large storage of combustible materials.

2.2. In addition there is a 2 inch and 6 inch diesel fuel pipe used to transfer fuel from the jetty to the power station and from the power station to MV Forest. It is understood this fuel line can contain 3,200 gallons of fuel at any time since it is used to supply the Public Works Department Diesel Store. The discharge and loading of fuel requires specific control of a number of safety factors which cannot be achieved at present.

2.3. There can be little doubt that should a fire occur at the jetty it would be extremely hazardous to fight and could result in a considerable loss.

2.4. Pending action regarding this recommendation the risks identified must be removed and a 30 gallon foam extinguisher provided at the jetty head.

FIRE PREVENTION REPORT.

TELEPHONE EXCHANGE.

1. BRIEF DESCRIPTION.

Single storey, concrete block walls, corrugated metal roof, concrete floor. Approximately 20 ft by 20 ft.

2. MEANS OF ESCAPE.

Satisfactory.

3. GENERAL.

- 3.1. The ducts into the exchange for cables should be infilled with sand.
- 3.2. There should be permanent ventilation into the battery room protected by a suitable wire mesh grill.
- 3.3. The large standby battery requires attention.

4. FIRE EQUIPMENT.

A 5lb Carbon Dioxide extinguisher should be provided. Only enclosed electric heaters should be used within the building.

5. FIRE SEPARATION.

Consideration should be given to enclosing the equipment room in fire resisting construction including a half hour fire resisting door.

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FIRE PREVENTION REPORT.

GYMNASIUM.

1. BRIEF DESCRIPTION.

Single storey, timber walls and floor, asbestos tile roof. Approximately 100 ft by 60 ft.

2. MEANS OF ESCAPE.

- 2.1. Exit doors from the main hall to open to be hung to open outwards and fitted with automatic fastenings.
- 2.2. Exit notices to be displayed above each exit from the main Hall.

3. FIRE EQUIPMENT.

1 x 15lbs dry powder extinguisher to be provided with 2 buckets of dry sand within the Boiler House and 4 x 2 gallon water extinguishers to be provided for the main hall. Two extinguishers to be sited in the main entrance lobby and one extinguisher sited near the exit from the main hall, (two exits).

4. FIRE ALARM.

A fire alarm is not considered necessary within this building.

5. FIRE ROUTINE.

The method of informing the Fire Brigade should a fire occur should be clearly displayed in the public rooms of the Hall e.g. 'IN CASE OF FIRE INFORM TELEPHONE EXCHANGE OF FIRE. EVACUATE ALL PERSONS. ONLY ATTACK THE FIRE IF THERE IS NO PERSONAL RISK.'

6. HEATING.

- 6.1. The storage tank should be separated from the heating chamber by bricking up the existing doorway. The outside doorway should similarly be bricked up and a small $\frac{1}{2}$ inch thick steel door provided to allow access for maintenance and filling. The brickwork should continue high enough to form a suitable bund.
- 6.2. The tank vent pipes should be extended to outside the building together with a fillpipe and guage for ease of filling.
- 6.3. Holes between the chamber and under floor area should be infilled with fire resisting materials.
- 6.4. There should be no storage of combustibles.
- 6.5. A drip tray should be provided beneath the burner.
- 6.6. It is assumed that the ceiling has concrete placed on top of the metal sheeting and is therefore fire resisting.
- 6.7. One 15lbs dry powder extinguisher and two buckets of dry sand should be provided.

FIRE PREVENTION REPORT.

TOWN HALL.

1. BRIEF DESCRIPTION.

Two storey, concrete block walls, ground floor concrete, first floor timber, felt tile roof. Approximately 150 ft by 50 ft.

2. MEANS OF ESCAPE.

2.1.1 FIRST FLOOR.

The exit arrangement from the main hall is considered unsatisfactory for the large number of persons who may use the Hall. The alternative exit route i.e. via the stage and exit stairway, is suitable only for 100 persons and an additional exit stairway should therefore be provided.

2.1.2 A new external stairway at least 6 ft 6 inches wide and sited at the rear of the building connected to the hall at the position of the last window near the stage. The stairway should not decrease in width throughout its height and should discharge at ground level onto a suitable pathway. No rise should exceed $6\frac{1}{2}$ inches and the going should be not less than 11 inches. There should be not less than three and no more than 16 risers in a flight. Adequate handrails and guardrails should be provided together with external lighting. Access doors to the stairway should be fitted with automatic opening devices and open onto a clear platform. They must not obstruct the stairway width. Glazing beneath the stairway should be fire resisting.

2.1.3 The following doors should be made fire resisting and self closing:-

Door to Kitchen
Door to Refreshment Room
Door to Main Hall.
Door to understage area.
Door to stairway from props room (including glazing)
Door to existing alternative stairway from stage.

2.1.4 The existing alternative stairway enclosure should be lined to form fire resisting enclosures.

2.1.5 The props room should be cleared of all waste and attention paid to housekeeping.

2.1.6 The occupancy of the main Hall should be limited to 500 persons and chairs should be linked together in groups of not less than 4 nor more than 12. Gangways, at least 3 ft 6 inches wide, should run across the front, centre and rear of the hall and down the centre and each side, when the Hall is used for a close seated audience.

2.2. GROUND FLOOR.

2.2.1 The following doors/screens to be made fire resisting.

Doors to be self closing or kept locked shut:

- Door to main stairway from corridor.
- Door to cleaners' stores.
- Doors to electrical intake rooms.
- Door in centre of corridor adjacent Cable and Wireless Office.
- Door to Post Office Sorting Room from stairway.

2.2.2 The final exits from both stairways to be secured only by automatic fastenings.

2.2.3 A suitable handrail to be provided on the internal stairway (West End).

2.2.4 All storage to be removed from the west end stairway.

3. STAGE.

3.1. All scenery used in stage productions to be inherently flame retardant or treated as recommended in notes for guidance. No amorcies or similar devices should be used on stage.

3.2. Smoking should be prohibited within the stage and under-stage areas.

3.3. Electrical equipment used in productions should be installed and operated by a competent person.

4. EMERGENCY LIGHTING.

4.1. A system of emergency lighting should be provided to illuminate the exit routes and stairways from the first floor. There should be additional lighting points within the Refreshment Room, stage areas and main Hall and illuminated 'EXIT' signs above the following doors:

- Exit to proposed Stairway.
- Exit from main Hall to Corridor.
- Exit from Corridor to Main Internal Stairway.
- Exit from Main Internal Stairway to open.

4.2. The exit signs referred to above should be maintained on throughout the time the public are present.

5. MANAGEMENT OF HALL.

5.1. Whenever the hall is used for public performances there should be a responsible person in charge i.e. The Manager.

5.2. This person should be responsible for the safety of the public and in particular the action to be followed in the event of fire. The Manager should follow a pre-determined drill for the evacuation of the public without panic and should have sufficient staff to assist in controlling evacuation particularly if there is a predominance of very young persons present. The staff should also know how to use the fire equipment provided.

6. FIRE ALARM.

A manual alarm should be provided in the ground floor corridor adjacent the central corridor screen and door.

7. FIRE ROUTINE.

A simple fire routine should be formulated for the day time staff and notices displaying the action to be taken in the event of fire permanently displayed.

8. FIRE EQUIPMENT.

8.1. Portable equipment should be wall mounted.

8.2. Four additional two gallon water extinguishers should be provided at first floor level and sited with two in the understage area and one at either end of the main hall.

8.3. A 4lb Dry Powder extinguisher and a fire blanket should be provided and sited in the kitchen and similar provision made on stage near the stage electrical console.

9. ELECTRICAL INSTALLATION.

The main electrical intake room should be suitably indicated. Electric lamps should be protected where they may come into contact with combustibles (stage areas).

10. HEATING.

10.1. The heating chamber and oil tanks to be separated as detailed in the notes for guidance.

10.2. The duct to the underfloor area to be sealed with fire resisting material.

10.3. The access doors to the oil storage tanks to be $\frac{1}{2}$ inch mild steel and locked securely.

10.4. The fusible links to be resited above the burners and the wire run over $1\frac{1}{2}$ inch diameter brass pulleys.

10.5. Two buckets of dry sand should be provided within the heating chamber.

FIRE PREVENTION REPORT.

POLICE STATION.

1. BRIEF DESCRIPTION.

Two storey, walls part stone part timber, corrugated metal roof, floors part timber part concrete. Approximately 70 ft by 40 ft.

2. MEANS OF ESCAPE.

- 2.1. The following doors to have 1 inch rebates and be made self closing:-

Lounge to stairway.
Dining Room to stairway.
Cell Block to stairway.
Cell Block to Prisoners' Recreation Room.
Heating Chamber to Passage.

- 2.2. The floor grill to be sealed with fire resisting material where it enters the cell block.

- 2.3. Combustible materials to be removed from within the cell block. A suitable store will have to be provided. It is understood that the cells are sometimes occupied whilst the station is unoccupied. This presents a serious risk and consideration must be given to the provision of a new separate cell block with automatic fire alarm detection incorporated and linked to the telephone exchange so that help may be rapidly summoned if a fire should occur.

3. FLAMMABLE LIQUIDS.

Suitable storage arrangements should be made to contain the diesel and petrolcum spirit used for vehicles.

4. FIRE ROUTINE.

A simple fire routine should be formulated and a notice detailing the action to be taken in the event of fire to be displayed for the benefit of all officers.

5. HEATING.

- 5.1. The heating chamber to be fully enclosed by fire resisting construction.
- 5.2. The fusible link fire valve wire to be re-designed and run over 1 1/2 inch diameter brass pulleys to outside.
- 5.3. A manual release to be incorporated by the heating chamber door.
- 5.4. The oil tank to be provided with a bund.

FIRE PREVENTION REPORT.

POWER STATION.

1. BRIEF DESCRIPTION.

The Power Station is sited on a hillside site to the rear of the playing fields in Stanley. The main generator building is a relatively new steel framed and sheeted building connected to a much older building, previously used as the generator building, sited to the rear and at right angles to it.

There are 3 diesel powered generators and associated electrical distribution equipment within the new building. The older building still contains generating equipment which is in the course of being dismantled so that, it is understood, a swimming bath can be formed.

Bulk fuel supplies are located to the rear of the premises and comprise a 7,000 gallon rectangular tank at present out of use, 2 x 300 ton and 2 x 1,500 ton circular fixed roof tanks. The 2 x 1,500 tanks are at high elevation to the generator building and supplies are piped to these tanks via a 6 inch pipeline running from the Government Jetty. The two 300 ton tanks have small bunds which are negated by surface drains and miscellaneous drain storage. The two high level tanks have no bund arrangement.

There can be little doubt that should any tank develop a serious leak or become ignited the effect would be disastrous for the generator building and possibly the foreshore area, immediately below (Government Jetty).

2. GENERAL.

- 2.1. All tanks should be effectively banded. Adequate provision should be made for surface water drainage and for access to pipeline isolation valves.
- 2.2. Suitable access should be made to enable appliances to reach the high level tanks.
- 2.3. Grassed areas surrounding the pipeline should be covered with a deep protective layer of sand or the grass kept cut short to reduce risk of grass fires.
- 2.4. Should the proposed water scheme be implemented consideration should be given to the provision of a branch pipeline to the high level tanks. Provision of suitable damming planks near to the existing bridge over the small stream would also enable maximum use of natural water supplies.
- 2.5. A manual isolation push button should be provided adjacent the exits from the generator room to enable the fuel supply to the diesel generator to be isolated in the event of an emergency.
- 2.6. 2 x 20 lbs Carbon Dioxide type extinguishers should be provided for use on the electrical distribution equipment.
- 2.7. A suitable flammable liquid bin or cupboard constructed to comply with the general notes for guidance should be provided for flammable liquid storage.

FIRE PREVENTION REPORT.

STANLEY JUNIOR SCHOOL.

1. BRIEF DESCRIPTION.

The school consists of a main building and demountable classroom. The main building is of concrete block construction with a timber floor.

2. MEANS OF ESCAPE.

The emergency exits from the demountable classroom should be fitted with automatic fastenings.

3. FIRE ALARM.

The existing class change system should be modified to form a simple alarm i.e. continuous ringing 'fire' short rings 'change'.

4. FIRE ROUTINE.

A fire routine has been formulated.

5. FIRE EQUIPMENT.

The existing extinguishers should be wall mounted so that there is one x 2 gallon water extinguisher adjacent each exit from the main school and demountable.

6. HEATING.

6.1. The oil storage tank requires enclosing in a one hour fire resisting enclosure and the ceiling requires underdrawing with fire resisting material.

6.2. The pullies on the fusible link fire valve should be replaced by brass pullies having a minimum diameter of $1\frac{1}{2}$ inches.

6.3. A drip tray should be provided beneath the burner unit.

6.4. Two buckets of dry sand should be provided.

FIRE PREVENTION REPORT.

STANLEY SENIOR SCHOOL.

1. BRIEF DESCRIPTION.

The school consists of a main teaching block, staff building, office building and science/handicraft building. Buildings are mainly timber with timber floors.

2. MEANS OF ESCAPE.

An additional exit should be provided from the Science laboratory. This could be by way of an interconnecting door to the handicraft room via the preparation room.

3. FIRE ALARM.

The existing class change system should be modified to form a simple alarm i.e. continuous ringing 'fire' short rings 'change'.

4. FIRE EQUIPMENT.

4.1. Two x 2 water extinguishers should be provided in the main school one sited adjacent each exit.

4.2. 2 buckets of dry sand should be provided in the Science laboratory. Extinguishers should be wall mounted.

5. FIRE ROUTINE.

A simple fire routine should be formulated and notices detailing the action to be taken to be displayed throughout the school.

6. FLAMMABLE LIQUIDS.

6.1. A suitable flammable liquids store should be provided for the Science laboratory together with suitable secure storage for corrosive and poisonous chemicals.

6.2. Further flammable liquids storage is required for duplicating spirit. It is understood the petrol vapour burners are being superseded by a propane gas installation. Attention is drawn to the notes of guidance regarding the installation.

7. STORAGE.

There should be no combustibles stored under the floor or above ceilings and in view of the high value of the educational film storage separate provision should be made of suitable storage facilities.

8. HEATING.

8.1. The oil storage tank requires a bund wall placing around it.

8.2. The pulleys on the fusible link fire valve should be replaced by brass pulleys having a minimum diameter of $1\frac{1}{2}$ inches.

8.3. The heating chamber requires enclosing in a one hour fire resisting enclosure and the ceiling requires underdrawing with

fire resisting materials within that enclosure.

- 8.4. One x 15 lbs Dry Powder type extinguisher and 2 buckets of dry sand should be provided.

FIRE PREVENTION REPORT.

METEOROLOGICAL STATION.

1. GENERAL.

- 1.1. The use of the roof for storage should be carefully controlled to reduce the amount of combustible materials.
- 1.2. Flammable liquids used by the Veterinary Officer should be stored in a suitable cupboard or bin.
- 1.3. The wiring installation within the roof space should be thoroughly examined and replaced as necessary.

2. FIRE EQUIPMENT.

- 2.1. The CTC extinguisher should be replaced by a 4.4 lb Dry Powder or 5lb Carbon Dioxide extinguisher and provision of 5 lb Dry Powder extinguisher should be made for the electrical equipment within the roof and the Veterinary Laboratory and Surgery.
- 2.2. The water type extinguishers are showing signs of deterioration and should be replaced.

FIRE PREVENTION REPORT.

DEPARTMENT OF CIVIL AVIATION.

1. STANLEY AIRFIELD.

The new airfield situated at Cape Pembroke was visited during construction and the following items noted.

2. MEANS OF ESCAPE.

- 2.1. The exit from the first floor is via an internal stairway which is centrally sited. Occupants of the first floor would, in the event of fire, affecting this stairway, have to leave via the meteorological area.
- 2.2. A suitable escape ladder should be provided from this roof and the two doors at ground level leading in the enclosure should be fire resisting and self closing.
- 2.3. The emergency exit doors from the generator room should have the bolts removed and the method of operation clearly displayed above the fastening device i.e. 'PUSH BAR TO OPEN'.

2.4. FIRE ALARM.

A simple alarm is installed.

3. FIRE EQUIPMENT.

The equipment supplied should be located as follows:-

TERMINAL BUILDING.

Adjacent Main Entrance	2 x 2 gallon Water Extinguishers.
Adjacent Arrivals Entrance	2 x 2 gallon Water Extinguishers.
Adjacent door to Electrical Equipment Room	1 x 5lb CO ₂ Extinguisher.
Adjacent door to Meteorological Area	1 x 5lb CO ₂ Extinguisher.

GENERATOR HOUSE.

Adjacent each exit to open (2)	1 x 5lb CO ₂ Extinguisher.
Adjacent exit from Electrical Distribution Room.	1 x 5lb CO ₂ Extinguisher.

4. HEATING.

- 4.1. The pullies on the fusible link fire valves should be of brass $1\frac{1}{2}$ inches in diameter.
- 4.2. The number of turns within the link wire should be limited and designed to prevent 'kinking' to enable ease of operation.
- 4.3. There should be a drip tray beneath the burner unit.
- 4.4. It should be confirmed that fire dampers have been installed in those locations where the warm air ducting leaves the heating chamber.

4.5. The surface water drain valves and pipework on the oil storage tank bunds should be of sufficient diameter to enable ease of clearing and prevention of blockage.

5. GENERATOR ROOM.

The duct between the generator room and electrical distribution room should be sealed by fire resisting material at the point of the separating fire wall.

6. EMERGENCY WATER SUPPLY.

The valves and external pipework of the tank should be protected against external climate conditions and freezing.

FALKLAND ISLANDS GOVERNMENT AIR SERVICE.

1. BRIEF DESCRIPTION.

The service is based at a hanger on the foreshore of Port Stanley $\frac{1}{2}$ mile west of town. The hanger, a corrugated metal sheeted and steel framed building, is used to service two 'Beaver' float aircraft.

2. PETROLEUM STORAGE AND DISPENSING.

The fuel storage consists of a Dunlop 5,000 gallon flexible membrane tank mounted on a concrete platform and a 1,500 gallon underground storage tank. Fuel is supplied via a fill/supply pipeline to inside the hanger. A 'Gilbarco' pump within the hanger then dispenses fuel to the aircraft. There is also a small 40 gallon petrol bowser with a handpump.

Fuel is pumped into the storage tank via the supply line from 45 gallon tanks located within the hanger.

It is considered that this process is hazardous and the storage arrangements do not conform with current safety precautions. The following items should receive attention:

- 2.1. The underground installation should conform to the model code referred to in general guidance notes.
- 2.2. The flexible membrane tank should have adequate catchpit arrangements and be protected from external fire. Check life with Manufacturers.
- 2.3. The dispensing unit should be sited externally and no petroleum spirit, except small quantities required for servicing should be used within the hanger.
- 2.4. The latched nozzle should be either replaced by one of the unlatched type or a pre-set limiting device fitted to the pump so that no more than 20 gallon can be delivered on each occasion.
- 2.5. The requirements of the Department of Trade and Industry regarding the fueling of handplanes and Helicopters should be followed where applicable especially regarding precautions against static electricity.
- 2.6. Electrical equipment within the defined hazard areas should comply in all respects with the model code referred to in general notes of guidance and there should be adequate indication of the emergency isolation switch gear.
- 2.7. The cautionary notices referred to in the model code in general notes of guidance should be displayed in all locations applicable to the fuel dispensation and storage.

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3. CELLULOSE SPRAYING.

Cellulose spraying is undertaken in a minor form within the workshop and particular care must be taken when this work is in progress. Flammable vapours will be present and ignition can occur very quickly. Attention should be given to the following:-

- 3.1. Electrical equipment within the spraying area should be of the fully enclosed type.
- 3.2. Ventilation should be direct to open air and the fan electric motor should be of the flameproof type.
- 3.3. Adequate provision should be made to ensure ducting and filters around fans are kept clean of any cellulose residue. Non ferrous tools only should be used for this purpose.
- 3.4. Whilst spraying is in progress no other work should be undertaken which is liable to produce a spark within the work area.
- 3.5. The two exits must be immediately available, automatic fastenings being provided.
- 3.6. The cellulose paints and thinners should be stored in a suitable metal bin or cupboard designed in accordance with the general notes for guidance. No smoking, as at present, must be strictly enforced.

4. FIRE EQUIPMENT.

- 4.1. Provision should be made of a 20lbs Carbon Dioxide type extinguisher for use on engine fires.
- 4.2. The existing CTC type extinguishers should be removed and replaced.

FIRE PREVENTION REPORT.

1. FOX BAY EAST.

1.1. SCHOOL ROOM.

- 1.2. The coal fire situated within the Classroom is in urgent need of attention being damaged by heat and with a gap between the inner and outer sections of the main body.
- 1.3. This type of fire is considered unsatisfactory from the childrens' safety and a number of minor incidents have occurred in which children have received minor finger burns, there being no fire guard.
- 1.4. An alternative form of heating should be investigated preferably of the central heating type or utilizing room heaters of low surface temperature. If a modified form of central heating is used the burner to be remote from the childrens' classroom.

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2. WIRELESS STATION.

- 2.1. The wireless station should be separated from the generator house by a fire resisting self closing door fitted within the concrete block structure of the generator house.
- 2.2. There should be permanent high and low ventilation in the battery room direct to open.
- 2.3. The combustible storage within the wireless room and associated workshop and roof space should be kept to the minimum including used teleprinter tapes.
- 2.4. The coal fire situated within the wireless room is defective. This type of heating is not recommended within this building due to the presence of dust and the compact nature of the room.
- 2.5. The storage of diesel fuel for the generators should not be on the slope above the building unless adequate arrangements are made to prevent accidental spillage.

3. GOVERNMENT POST OFFICE HOUSE.

- 3.1. It is understood that some wireless equipment will shortly be removed to this building. Adequate heating arrangements will be required for the room in which the equipment is located and again central heating from the existing burner unit should be considered since there is usually a need with equipment of this type to maintain a steady temperature. This system should include the Post Office itself which also has a coal fire with defective flue.

3.2. FIRE EQUIPMENT.

No fire equipment is provided within the Doctor's House which is not in use at present and equipment generally has not been maintained.

An additional dry powder extinguisher will be required for the radio room when it is established.

The Superintendent of Fire Brigades should arrange for suitable spare charges to be sent to the settlement together with the necessary instructions regarding basic extinguisher maintenance.

3.3. FIRE FIGHTING.

There is no provision for fire fighting within the settlement. Fortunately the majority of buildings are isolated from each other and whilst the loss of one building is possible spread would normally be restricted. It would be an advantage, however, if a small portable pump and associated equipment were available and the cost shared between Government and the farm owners.

FIRE PREVENTION REPORT.

M.V. FOREST 144 GROSS TONNAGE.

1. BRIEF DESCRIPTION.

The MV Forest is a small coastal vessel of the single deck type used by the Ministry of Defence for training and similar duties.

The vessel is oil fired, fuel being carried in a tank situated within a double skin bilge.

There is a fire/bilge pump rated at 70 gpm or 20 ton/hr sited within the engine space.

The single hold runs from aft of the cable locker to forward of the engine space bulkhead. The hold has one forward access hatch and the main web beam hatchway, which is normally kept secured by tarpauline, battenbar and wedge. This hold has been modified to provide sleeping accommodation for 24 men.

Fire equipment is provided to comply with the Merchant Shipping (Fire Appliance) Rules 1965 and in addition a semi-rotary hand pump is located on the starboard side near the hatch to the engine space to provide a separate water supply to tackle engine space fires.

2. HOLD.

In view of the general use to which the hold is put i.e. sleeping accommodation, consideration should be given to the provision of an additional escape hatch located in a remote position to the existing hatch.

3. FIRE EQUIPMENT.

- 3.1. Hose provided on the vessel is showing signs of deterioration and should be replaced preferably by $1\frac{1}{2}$ inch duraline hose which can withstand salt water exposure.
- 3.2. Additional dry powder extinguishers or carbon dioxide should be provided at the engine space hatchway for use on electrical fires within the space and on the bridge.
- 3.3. Branchpipes for use with hose should be stowed near to hose in suitable locations where they are protected from salt water exposure but readily available. A spray branch should be located close to the engine space hatchway.
- 3.4. The semi-rotary pump is defective and is understood to be constantly defective due to salt water corrosion. A small diesel/petrol driven pump should be provided as a replacement.

4. GALLEY.

The plastic fuel line to the galley stove should be replaced by metal pipe since its location makes it vulnerable to a galley fire.

FIRE PREVENTION REPORT.

GOVERNMENT PRINTING OFFICE.

1. BRIEF DESCRIPTION.

Single storey, wooden walls, wooden floor, roof steel on timber truss approximately 80 ft by 30 ft.

2. MEANS OF ESCAPE.

All exits from the building to be maintained available without recourse to the use of keys when the building is occupied.

3. ELECTRICAL INSTALLATION.

The main isolation switch should be clearly indicated. Electric lamps should be protected in those locations in which they may come into contact with combustible materials.

4. INFLAMMABLE LIQUIDS.

The supply of inks, paraffin and cleaning fluids should be contained within a suitable cupboard.

5. FURNACE.

The floor, ceiling and walls within 5 feet of the furnace should be covered with fire resisting materials and the area kept clear of all combustible materials.

6. FIRE ROUTINE.

A simple fire routine should be formulated.

FIRE PREVENTION REPORT.

ROYAL NAVAL DETACHMENT, MOLEY BROOK, N. STANLEY.

1. BRIEF DESCRIPTION.

The accommodation comprises a number of buildings all interconnected by covered passageways.

2. MEANS OF ESCAPE.

- 2.1. The existing doors from each individual building into the covered passageways should be upgraded to provide a smoke stopping standard, i.e. 1 inch rebates, self closing device and wired glazing.
- 2.2. One window from each of the sleeping dormitories should be clearly defined as an exit and suitably marked. The fastenings should be simple with no restraining catches and all storage removed from immediately in front of the window.
- 2.3. A floor hatch and vertical wall ladder should be provided from the dark room and communications room in the roof space of the administration building.
- 2.4. Flammable liquids within the sick room should be stored in a suitable cupboard or bin and bulk flammable liquids should be stored in an externally sited store.

3. FIRE SEPARATION.

Due to the nature of construction and the high load factor of the buildings there is little doubt that a serious fire could quickly spread from building to building. Separation in the form suggested for means of escape will help slightly in reducing the internal spread. Fire resisting separation of the older brick section of the kitchen should be included. Consideration should, however, be given to increasing the fire resistance of the internal partition in the Stores section of the roof space of the administration building to a half hour fire resisting standard.

4. HEATING.

- 4.1. The oil tank bund to the new tank requires a suitable surface water drain valve.
- 4.2. The fusible links require resiting above the burner units of the two boilers.
- 4.3. A manual isolation valve should be fitted to the fusible fire valve on the small boiler.
- 4.4. Drip trays should be supplied under each burner unit.
- 4.5. The holes from the small boiler house to the main building should be infilled with brick or cement.

5. FIRE FIGHTING EQUIPMENT.

As previously stated the buildings by virtue of their construction and high load factor are at risk.

Attendance of the local Fire Brigade would not be less than 20 minutes and, therefore, action by personnel is essential if a fire is to be successfully fought.

The equipment provided is sufficient for a small fire and it is suggested that the following additional improvements be made to enable more rapid deployment of major equipment.

5.1. A suitable hard standing to be provided at the foreshore to enable the new fire pump to work from unrestricted open water supply at all states of the tide.

5.2. A suitable sump should be constructed for the strainer.

5.3. A permanent pipeline suitably protected from corrosion to be laid from the hard standing to the emergency water supply tank at the camp. This pipe should be fitted with a permanent connection into the underground tank and with $2\frac{1}{2}$ inch female instantaneous outlets.

5.4. The sea pump end of the pipe should be fitted with $2\frac{1}{2}$ inch male instantaneous couplings.

In operation the hard standing pump would only have to be started, its suction placed in the sump and 3 short lengths of hose run into the pipeline couplings for the camp tank to be supplied and an additional outlet.

5.5. The quantity of foam compound carried should be increased to 30 gallons to allow for regular practices and for a minimum supply of 20 gallons.

5.6. Additional breathing apparatus cylinders should be supplied to allow rapid reservicing of the breathing apparatus sets and routine pressure testing of cylinders unless alternative arrangements are made.

FIRE PREVENTION REPORT.

ROYAL NAVAL FUEL DEPOT (FIKLAND ISLANDS COMPANY).

1. BRIEF DESCRIPTION.

The installation comprises two fixed roof 60 ft diameter bulk diesel fuel tanks having a capacity of 8,000 tons each and two storage buildings containing large quantities of helicopter aviation fuel. There is a pump house and associated pipeline to a jetty and a fire station.

The equipment within the fire station comprises two trailer pumps, 8 x No. 10 foam making branchpipes, over 1,000 gallons of foam compound, 2 compressed air breathing apparatus, numerous items of miscellaneous fire equipment e.g. hose, branches and a landrover.

One man is permanently employed in maintenance duties and within his capacity he achieves a relatively high standard of maintenance.

The site, which is on the North Shore of Port Stanley, opposite the FIC Jetty, is isolated and dependant upon weather conditions and availability of transport at least 20 minutes would elapse before assistance could be given.

2. BULK STORAGE.

The two bulk tanks are within a bund and connected to a dump bund adjacent. Unfortunately the surface water drain to sea is rusted open.

The effect of a major leak would, therefore, be direct into Stanley harbour.

Fixed foam pourers have been fitted to tanks but the associated pipework has been removed rendering them useless.

The bund has been further weakened by the formation of an entry track used by contractors who demolished a protective blast wall some years ago.

- 2.1. The bund should be repaired to provide a safe catchment area and the associated surface drain equipment refurbished to a working condition.
- 2.2. Consideration should be given to the installation of base injectors for foam compound with a permanent sea water main and compound stock tank controlled by a suitable remote pump house. The object being to enable the site maintenance man to take positive action whilst awaiting assistance.
- 2.3. Alternatively there should be suitably constructed pumping positions along the foreshore to enable pumps to reach the sea and the fixed foam pourers renewed.

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- 2.4. If a permanent salt water main is installed provision should include suitable ground hydrants near the storage buildings and on the Jetty.
- 2.5. The compressed air breathing apparatus requires servicing and thorough examination and one of the trailer pumps is in need of mechanical attention.
- 2.6. Portable extinguishers of the 15 lbs dry powder type or 2 gallon foam type are required in the storage areas, jetty pump house, fire station and house to enable rapid action to be taken against incipient fires.
- 2.7. The general condition of some equipment indicates a need for thorough examination and testing and the bulk foam stock whilst appearing satisfactory requires practical tests to check on its condition since some appears to have been in storage a considerable time.

CABLE AND WIRELESS TRANSMITTING STATION.

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1. BRIEF DESCRIPTION.

An L shaped single storey building, walls part timber and part corrugated metal sheeting, floor concrete, roof corrugated metal sheeting. Approximately 80 ft by 90 ft.

2. MEANS OF ESCAPE.

The propane cylinder used for minor work within the workshop should be sited externally and the supply piped into the building by suitable metal piping.

3. FLAMMABLE LIQUIDS.

- 3.1. The diesel fuel storage tank should be effectively banded to prevent spread of fuel to the Generator House.
- 3.2. There should be a manual isolation valve fitted to the generator supply pipeline which is accessible from outside and which will rapidly isolate the supply in the event of a serious fire.
- 3.3. Drum storage of fuel should be isolated from the buildings to an isolated but secure area.
- 3.4. The disused oil storage tank should be removed from site.

4. FIRE SEPARATION.

It is understood that the transmitting hall is lined with asbestos insulation board. Unfortunately, this enclosure has been weakened by the introduction of an opening in the workshop.

In view of the high cost of equipment consideration should be given to providing fire resisting doors across the opening and similarly upgrading the door to the entrance hall to a half hour fire resisting self closing standard.

The Government equipment is similarly in a vulnerable position due to the presence of quantities of various items in storage. To protect this area it would be necessary to line partitions and upgrade the entrance door to a similar standard to the transmitting hall.

5. FIRE ALARM.

It is understood the premises are permanently manned by at least one man but he does not maintain a wakeful watch. The premises contain a large amount of very expensive equipment and it is important to ensure rapid assistance if the subsequent loss is to be minimal. For this reason consideration should be given to automatic smoke detection and direct linking of the building to the telephone exchange.

6. FIRE EQUIPMENT.

The scale of portable equipment is suitable and adequate for attacking incipient fires. Larger amounts of CO₂ type extinguishing agent would be necessary to tackle a major fire

without damaging the equipment installed and, therefore, 1 x 20lb CO₂ should be provided. In view of the general construction of the building 2 x 2 gallon water type extinguishers should be provided. The extinguisher should be adequately labelled 'NOT FOR USE ON ELECTRICAL FIRES'.

7. GENERAL.

In view of the high content cost all storage within the building should be non-combustible and arrangements should be made to site all combustibles remotely from the main transmitting station.

RECEIVING STATION.

1. BRIEF DESCRIPTION.

Single storey, walls timber, floor timber roof
Approximately 30 ft by 60 ft.

2. MEANS OF ESCAPE.

Satisfactory.

3. FIRE SEPARATION.

The main equipment room should be isolated from the general office accommodation by a fire resisting partition. The glazing within this partition should be of a similar standard i.e. $\frac{1}{2}$ inch georgian wired glazing. Any floor ducting should be adequately sealed if it passes through the partition and similarly the partition should be carried to the underside of the roof.

4. FIRE ALARM.

Again consideration should be given to automatic smoke detection and direct fire alarm termination. In this particular building this is more essential since the building is unoccupied at night and some equipment is left switched 'on'.

5. FIRE EQUIPMENT.

One additional 20lb CO₂ extinguisher should be provided.

6. GENERAL.

The gorse hedges which are close to the eastern end of the building should be cut back to a minimum distance of 20 feet to prevent radiated heat and flame spread.

FALKLAND ISLANDS COMPANY.

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WEST STORE.

1. BRIEF DESCRIPTION OF PREMISES.

The store consists of a retail shop building, a stock building and a number of storage buildings.

1.1. RETAIL SHOP BUILDING.

Part single part two storey, walls part concrete block part corrugated metal sheeting, floors part concrete part timber, roof corrugated metal. Approximately 100 ft by 150 ft.

1.2. MEANS OF ESCAPE.

1.2.1. The door to the rear stockroom, west wing, should be made fire resisting and self closing and the partition lined on the stockroom side by fire resisting material.

1.2.2. Flammable liquids, i.e. paints, lighter fuel and petroleum based adhesives, should be kept to the minimum within the retail sales area.

1.3. FIRE ALARM.

A simple electric fire alarm system should be installed with break glass type operating points located adjacent each main exit to open (3).

1.4. FIRE EQUIPMENT.

The water type extinguishers provided (5) are considered adequate and well located. All extinguishers should be wall mounted. The CTC type extinguishers provided should be removed and replaced by 3 x 4.4lbs Dry Powder extinguishers located as follows:-

adjacent paint storage.
adjacent sales counter main shop.
adjacent main electrical intake.

1.5. FIRE ROUTINE.

A fire routine should be formulated, with the emphasis on staff assisting members of the public, detailing the action to be taken in the event of fire. Notices detailing the action to be taken should be displayed for the benefit of staff.

1.6. HEATING.

1.6.1. The door to the heating chamber should be made fire resisting and self closing and the existing glazing should be replaced by fire resisting glazing.

- 1.6.2. The roof to the heating chamber is asbestos cement sheeting. This material shatters quickly under heat and is not regarded as fire resisting. It should be replaced by fire resisting material.
- 1.6.3. The openings into the sales areas should have fire dampers fitted at the points they penetrate the heating chamber walls.
- 1.6.4. A fusible link fire valve should be fitted to the burner unit.
- 1.6.5. The oil storage tanks should be surrounded by a bund wall and the flexible fuel pipe should be replaced by a rigid metal pipe.

2. STOCK BUILDING.

Part single storey part 3 storey, walls wood, floors wood, roof corrugated metal sheeting. Approximately 40 ft by 60 ft.

2.1. MEANS OF ESCAPE.

- 2.1.1. The two sections of the three storey building should be separated by substantial doors at ground and first floor level.
- 2.1.2. A new link should be made at third floor level between the two sections and a fire resisting door placed at the link position.
- 2.1.3. An additional stairway/ladder should be installed between first and ground levels of the east section.
- 2.1.4. Doors to open from the east section should be made easily openable from within without recourse to the use of keys.

2.2. FIRE ALARM.

In view of the high risk nature of the building and its contents serious consideration should be given to the provision of automatic detection in this building.

2.3. FIRE EQUIPMENT.

There should be 2 x 2 gallon water extinguishers at each floor level and the existing CTC extinguisher should be replaced by 1 x 4.4lbs dry powder extinguisher sited adjacent the main electrical intake to the building,

2.4. HEATING.

The radiant electric heaters should have a suitably sized protective section of fire resisting material placed directly above them on the underside of the ceilings.

2.5. ELECTRICAL INSTALLATION.

Where electric lamp fittings are likely to come into contact with combustibles they should be suitably guarded.

2.6. GENERAL.

A rigid 'No Smoking' ban should be enforced within this building.

3. FLAMMABLE LIQUID STORE.

Single storey, corrugated metal walls and roof, earth floor. Approximately 70 ft by 15 ft.

- 3.1. This building should be modified so as to conform to the standard described in notes for guidance.
- 3.2. The existing electrical installation is unsuitable and should be disconnected outside the building until alterations are made and approved fittings provided.

4. EXTERNAL STORES (EX BAKERY).

Two storey, walls part brick part corrugated metal, corrugated metal roof, floors part concrete part timber. Approximately 80 ft by 20 ft.

4.1. MEANS OF ESCAPE.

- 4.1.1. A suitable hatch and ladder should be provided from each extremity of the first floor to ground level.
- 4.1.2. The flammable liquids held in the Motor Spares section should be contained in a suitable bin or cupboard.
- 4.1.3. The gas supply cylinders should be housed in a suitable enclosure.

4.2. FIRE EQUIPMENT.

The CTC type extinguishers should be removed and one additional 2 gallon water extinguisher and 1 x 4.4lbs dry powder extinguisher provided.

5. BOOYLE BUILDING. (Part occupancy only)

Single storey, corrugated metal walls and roof, concrete floor. Approximately 90 ft by 20 ft.

5.1. MEANS OF ESCAPE.

Satisfactory.

5.2. FIRE EQUIPMENT.

The existing CTC extinguishers including those in the stores opposite should be removed and replaced by 1 x 15lbs dry powder extinguisher.

This extinguisher should be located adjacent the exit from the Bottle store. It is not considered necessary to provide additional equipment for the external stores opposite this building.

5.3. HEATING.

A fire resisting ceiling should be installed over the heating chamber at the height of the concrete block wall and the door lined to upgrade to a fire resisting standard.

EAST JETTY.

1. BRIEF DESCRIPTION.

The Jetty is a 'T' shaped construction extending approximately 300 feet out into Stanley Harbour and is approximately 160 ft. wide at the quay.

The construction is mainly timber and use has been made of old timber shipwrecks both as supporting structure and warehousing. The wreck of the 'EGERIA' is still in use at two levels as a warehouse.

There are four corrugated metal structures and one of timber on the jetty. The seaward warehouse is used for wool storage. The wreck of the 'EGERIA' for wool and general storage. There is a jetty workshop used mainly for rope work, a small mess building for workmen and two transit sheds, one of which is used for cement. Tractors and other vehicles used to handle cargo are housed on the jetty and there are two fuel pipelines. A 2 inch pipe supplies two 50 ton diesel tanks in the FIC Yard and a 6 inch pipe passes along the Jetty and foreshore to the premises of YPF. It is understood that the 6 inch pipe is not in use at the present time.

The Jetty is the commercial centre of the Islands since all bulk supplies of food, general goods, and merchandise are traded over the jetty. This cargo arrives by a charter vessel every three months. It is offloaded quickly so that the outgoing cargo of wool can be onloaded and the charter vessel can sail with the minimum of delay.

The wool is shipped into Stanley by the M.V. MONSUNEN. This vessel sails around the Islands, visiting settlements, collecting wool and delivering cargo shipped in by the Charter vessel.

There is always, therefore, cargo on the jetty either waiting to go on the M.V. MONSUNEN or charter vessel or being sorted for distribution.

2. GENERAL RISK.

There is a serious risk of fire to the jetty simply by its construction and use. The following specific points were noted:-

Combustible waste thrown between the transit shed ramp and main jetty and between the quay and 'EGERIA'.

Electrical installation unsuitable and in poor condition.

No prohibition of smoking.

Tractors and other vehicles garaged in wool store.

Flammable liquids stored in Workshop and ESERIA.

Liquified and compressed gas cylinders stored in ESERIA.

There is general public access.

Workmens mess sited adjacent 6 inch pipeline connection.

No provision against collision for pipeline and associated equipment.

It is considered that to reduce the risk of fire to the jetty the following action should be taken:-

Combustible waste, flammable liquids and compressed gases should be removed from the jetty.

Vehicles should not be garaged on the jetty and petrol driven vehicles prohibited. Spark arrestors should be fitted to diesel vehicles.

Serious consideration should be given to providing an onshore workshop and rest room.

Smoking should be prohibited.

General public access should be controlled.

Strict control should be placed over fuel transfers (including drummed petrol) to ensure current safety practices are enforced so far as practicable.

Electrical installations should be examined and equipment replaced to comply with current regulations of the Institution of Electrical Engineers.

Pipelines and associated equipment should be protected so far as is practicable from collision/unauthorised interference.

It is emphasised that the jetty has inherent risk due to its constructions and use and, therefore, care should be exercised to reduce so far as practicable the risk of ignition. The transfer of fuel on the jetty further introduces additional risk which may possibly be alleviated if the proposed jetty for oil products is constructed and transfer operations transferred.

Consideration of a suitable 4 inch pipeline supplied from the Public Jetty with 2½ inch instantaneous hose outlets on the company jetty should be given. This pipeline with a suitable inlet could be charged with salt water by a pump operating on the Public Jetty and suitable first aid and fire fighting equipment provided at strategic positions.

It may be possible, at a later date and dependant upon supply, to have this main supplied direct from the public fresh water system and permanently charged.

In the interim period adequate provision should be made of

water extinguishers in those vulnerable locations such as the wreck 'EGERIA'.

The conclusions of the previous investigation into the use of this jetty for general fuel transfer have been examined and are generally supported.

FIRE PREVENTION REPORT.

PETROL STORAGE AND DISPENSATION. (PARKLAND POLYMER COMPANY).

1. BRIEF DESCRIPTION.

Three premises are utilised for the storage or dispensing of petroleum spirit which arrives at present in 45 gallon drums. They include a drum store within the stock yard of East Jetty a garage filling station and a bulk storage building referred to as the 'old butchery' adjacent the YPF installation.

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2. GENERAL RISK.

- 2.1. The degree of risk associated with these buildings is extremely high.
- 2.2. The stock yard is a hazardous location due to old drum storage and miscellaneous combustible storage and the store building does not comply with provision for adequate ventilation.
- 2.3. The filling station was found to have numerous faults including water on storage tanks, open fill pipes, unsafe electrical installation and leaking fuel lines.
- 2.4. The main store which is entirely timber also had unsatisfactory wiring and the nature of construction of the building is considered unsuitable.
- 2.5. It is understood that FIC are awaiting decision regarding the use of the YPF installations with a view to discontinuing their petroleum activities, however, if the present operations are to continue then these installations require considerable improvement if they are to be regarded as safe and complying to the code of principles referred to in the general notes for guidance.

3. STOCK YARD.

- 3.1. The stock yard requires clearing of all combustible items. In particular the removal of old drums which at present surround the store, and present a hazard not only to the site but overlooking property.
- 3.2. The store requires high or low ventilation suitably protected by fine mesh gauze.
- 3.3. There should be at least a 1 x 5lb dry powder extinguisher or 1 x 2 gallon foam extinguisher for every 100 gallons of petroleum stored.
- 3.4. Provision should be made to prevent outflow from the filling building and remote isolation of the supply from the gravity tanks for use in the event of fire.
- 3.5. All weed and grass within at least 50 feet of the store should be removed and the boundary fence carried across the stock yard approximately this distance from the store to form an enclosed area for use only by authorised personnel.

- 3.6. No storage of combustibles should be permitted anywhere within this area which should be designated strictly 'No Smoking'.
- 3.7. The diesel stock tanks within this area require suitably bunding against outflow and adequate provision of fire equipment. In this respect at least 2 x 30 gallon foam extinguishers should be provided or equivalent dry powder.
- 3.8. The electrical installation should comply fully with the current regulations for the Institution of Electrical Engineers particularly regarding the transfer of fuel to the garage and filling shed.

4. PETROL FILLING STATION.

- 4.1. The present petrol filling station does not comply with many of the safety requirements necessary for the safe storage and dispensation of petroleum spirit. Arrangements should be made for the following tests/work to be carried out if it is intended to continue with this installation:
 - 4.2. The tanks and pipeline should be subjected to nitrogen pressure testing at 10 p.s.i. for 24 hours to test for possible leakage. Should they be found satisfactory the following work should be carried out.
 - 4.3. The tanks should be surrounded in a fine concrete to a minimum thickness of 6 inches.
 - 4.4. The filling and dipping and suction pipes of each tank should be contained in a brick or concrete manhole chamber fitted with a water tight cover at ground level.
 - 4.5. The area above the fine concrete on the tank should be back filled with clear sand/hardcore to the appropriate ground level and finished with a suitable concrete cover.
 - 4.6. The tanks should be anchored down if there is a risk of floatation.
 - 4.7. The metal sheeted shed should be removed.
 - 4.8. The suction lines should run below ground level, enclosed by a minimum of 6 inches of fine concrete.
 - 4.9. There should be no openings into the tanks other than for filling, ventilating and dipping. The filling pipe should serve as the dipping pipe.
 - 4.10. The filling pipe should continue to within $1\frac{1}{2}$ inches of the tank bottom and suction pipe should continue to within $\frac{1}{2}$ inch of the tank bottom to ensure a liquid seal.
 - 4.11. Each tank vent should have a minimum diameter of $1\frac{1}{2}$ inches and discharge upwards in the open air at least 12 ft above ground level and not closer than 5 ft to any opening into the building.
 - 4.12. The petrol pump should be located externally from the

building and the base infilled with sand with a cement skim to the level of the inside framework.

- 4.13. The pump for convenience of electrical installation should be at least 14 feet away from any opening to any building and should have a limiting device designed to prevent continuous flow after 20 gallons.
- 4.14. The area surrounding the pump should be covered with concrete suitably reinforced above the suction pipeline to prevent damage by vehicles vibration.
- 4.15. Adequate interceptors should be installed to prevent the outflow of spirit from the forecourt to the roadway or drains.
- 4.16. The electrical installation should comply fully with the recommendations of the model code referred to in the general notes of guidance i.e. Division 1, Division 2 and safe areas as defined and permanent bonding of the installation provided for the discharge of spirit from drums to tanks. This operation should be conducted either by hand or electric pump, but the installation of electrical equipment must comply with the current safety standards i.e. In the open air, in a well ventilated situation totally enclosed spark proof motors may be used.
- 4.17. The isolation switch for electrical operated pumps should be in a safe area and conspicuously marked with words:-

'PETROLEUM SPIRIT PUMPS
SWITCH OFF HERE.'
- 4.18. Conspicuous warning notices should also be displayed in a prominent position near the tanks and pumps with the words:-

'PETROLEUM SPIRIT
HIGHLY INFLAMMABLE
NO SMOKING
SWITCH OFF ENGINE'.
- 4.19. If it is intended to discontinue with the installation then the tanks require emptying and either gas freeing, before their removal to a safe place or infilling in situ with a cement slurry.
- 4.20. The diesel oil storage tank should be banded and preferably the arrangement for supply for dispensing should be similar to the petroleum spirit e.g. Pump on forecourt etc. Galvanised steel should not be used for pipework.

5. OLD BUTCHERY. (PAKLAND ISLANDS COMPANY).

- 5.1. The use of this building is considered unsuitable for the storage of such large quantities of petroleum spirit i.e. 20,000 gallons. Whilst it is fully realised that the site is remote from Stanley the safe storage requires the following:

Adequate means of escape.

Adequate provision against intruders and outflow.

Protection from possible grass or similar fires.

Suitably installed electrical equipment.

- 5.2. It is considered that it would be difficult to achieve the above in the existing buildings and consideration should be given to forming a new storage area as follows:
- 5.2.1. A suitable area should be enclosed by a 6 ft high unclimbable fence.
- 5.2.2. An excavation should be made and lined with concrete to form a bunded area within the enclosure with a minimum distance of 50 ft between the bund outer walls and the perimeter fence.
- 5.2.3. The bund should be divided into areas by low internal walls, suitably ramped to enable drums to be manhandled easily, so that no more than 5,000 gallons is within each smaller bund.
- 5.2.4. A concrete vehicle loading ramp should be constructed at the entry of the site so that the vehicle does not enter within 20 ft of the bund area.
- 5.2.5. The ground within the enclosed area, excluding the bund should be covered with sand or similar material to prevent spread of fire from outside the site or the grass kept short.
- 5.2.6. Any electrical installation within the site should comply fully with model code referred to in the general notes for guidance. In this connection it would be simpler to install perimeter lamp standards which would not come within the defined risk areas and would therefore not be so expensive to provide.
- 5.2.7. Adequate fire fighting equipment should be installed. In this respect it should be at least 2 x 30 gallon foam extinguishers or 300 lbs of dry powder extinguishers.

M.V. MONSUNEN 315 D.W. TONNAGE.

1. The M.V. Monsunen is a small coastal vessel of the single deck type used to supply general merchandise to settlements and remove wool clip from the settlements to Stanley. The wool clip in 750 lbs bales hessian wrapped and compressed.

She is operated by the Falkland Islands Company and is in joint ownership with FIC and Jepperson Heaton Limited.

The vessel is oil fired, fuel being carried aft of the engine space in 2 x 4.5 ton tanks.

The engine space also contains the fire/bilge pump which has an output of approximately 35 gallons per minute.

The single hold runs from aft of the forecandle crew quarters to forward of the engine space. Access is via a web beam hatchway secured at sea by tarpaulin, batten bar and wedge. There is no other access to the hold.

Aft of the forecandle crew quarters there is built into the hold a 16 ton diesel fuel tank, used to supply settlements, and pumped ashore by the vessel via a 2 inch rubber fuel line.

The hold is ventilated by two ventilators, one at either end of the hold and the engine space has a single ventilator.

The cargo carried is various but includes, livestock, acetylene and oxygen cylinders, small quantities of ammunition, up to 1,600 gallon of petroleum spirit in drums and miscellaneous food and other basic essentials required by the settlements.

2. ENGINE SPACE.

The engine space was found to be in a high state of cleanliness. Fires within this space are difficult to fight and due to the fact that the fire/bilge pump is located within the space and whilst normally running at sea it is sometimes isolated or not running, it could be extremely difficult to charge the fire main under those conditions without great personal risk. Under a serious fire situation it may not even be possible to enter the space and reliance would have to be placed on hand extinguishers.

3. CARGO HOLD.

Ventilation of the hold is limited and unlikely to be sufficient to reduce flammable vapours to a safe level. Furthermore leakage of flammable liquid into the bilges would introduce the additional risk that if the bilges were pumped the fuel would have to pass into the engine space.

There is no ventilation of the forward diesel cargo tank and whilst pumping rates are low there is no electrical bonding of the fuel pipeline.

There is no deck space available for the carriage of dangerous cargo and certain cargo can arrive for shipment without warning labels, i.e. Ammunition, and is, therefore, placed in the general cargo within the hold.

4. FIRE EQUIPMENT.

There is little foam producing extinguishers on board.

Whilst it is appreciated the vessel is operating in coastal waters it should be remembered that there is little if any firefighting facilities on settlements and that even if the M.V. Monsunen reached a safe anchorage the firefighting and subsequent loss or saving of the vessel would rest entirely with the crew and the equipment carried. Only in Stanley would real outside assistance be available.

In view of the above consideration should be given to implementing the following:-

1. An additional emergency fire pump to be provided and sited in a well removed position from the engine space.
2. Consideration to be given for the construction of a permanent weather deck over the centre part of the hold designed to support and contain dangerous cargo.
3. Provision of mechanical foam making equipment.
4. Implementation of safety provisions whilst transfer of dangerous cargos is in progress including the charging of fire mains and laying out of hose for immediate use.
5. The examination and if necessary the provision of a bonded fuel pipeline.
6. Harbour controls to ensure all dangerous cargo is clearly indicated prior to acceptance for loading.

FIRE PREVENTION REPORT.

YACIEMENTOS PETROLIFEROS FISCALES.

*OW. of date?
U- 40
LPG
solution?
Inshore
etc.*

1. BRIEF DESCRIPTION.

The Argentinian state oil company occupy a site east of Stanley on the foreshore of Stanley Harbour. The site includes distribution gantries, public dispensing pumps storage sheds and office accommodation together with above ground tank storage for various fuels including petroleum and diesel.

In addition the site contains some 500 LPGas cylinders.

The site is on a steeply graded slope and isolated in terms of nearby property except the FIC bulk petroleum store.

Externally there are 900 x 40 gallon drums containing fuel including petrol, gas, oil and aviation spirit and over 100 further LPGas cylinders.

A public road fronts the site and along its length runs a 6 inch pipeline from the FIC East Jetty end into the distribution depot at YPF.

The major installation is new and only part used due to a lack of a suitable tanker off loading jetty. There are proposals for a further 1,000,000 litres bulk tank and further storage of 3,000 LPGas cylinders.

2. DISTRIBUTION DEPOT.

- 2.1. The standard of construction within the Depot appears to conform with general standards for an installation of this size.
- 2.2. The following areas should, however, receive further consideration:-
 - 2.2.1. Prior to filling tanks and pipelines they should be pressure tested.
 - 2.2.2. Pipeline racks should have efficient means of prevention of spillage.
 - 2.2.3. Water should be removed from the underground tank manholes.
 - 2.2.4. The bases of dispensing pumps should be infilled with sand and cement slurry.
 - 2.2.5. The interceptor arrangements should be examined and cleaned to ensure they are working satisfactory.
 - 2.2.6. Grass within the site should be cut and kept short.

- 2.2.7. The bunds round one tank are showing signs of collapse due to earth movement.
- 2.2.8. The refrigerator within the storage shed should be removed if the shed is utilised for drum storage etc.
- 2.2.9. The embankment drain is partly blocked and requires cleaning.
- 2.2.10. The fire equipment provided is unsuitable in that it cannot be taken to the rear of the site easily due to pipe racks and ground contours. Additional portable equipment is available and should be sited advantageously around the site.
- 2.2.11. Access to the Fire Brigade is very restricted within the storage area and arrangements should be made to construct an external perimeter road suitable for vehicles completely around the site. Suitable gates should be provided on the rear of the site for Fire Brigade access.
- 2.2.12. The control of the site and provision of notices should be as described in the Model Case Conditions of Licence for a Distribution Depot.
- 2.2.13. A fire ring main should be provided along the perimeter road with hydrants at strategic intervals. This main which could for the present be supplied by pumps working from the foreshore should be extended onto the proposed new towns main at a later date and onto the new jetty if this proposal is proceeded with.

3. EXTERNAL STORAGE.

- 3.1. The existing external storage is both undesirable and dangerous in that drums often 5 high are stacked along a public roadway without any separation from the general public or accidental damage by vehicles.
- 3.2. The provision of a jetty and the use of the Distribution Depot would no doubt help relieve this situation considerably.
- 3.3. In the interim period the storage of drums should be in a suitable enclosed area excavated and lined with concrete to form a bund and separated by at least 50 feet from the bund to the perimeter fencing.
- 3.4. Bunds should be sub-divided into smaller areas by walls half the height of the bund wall so that no more than 5000 gallons is contained in each bund. Grass within the site should either be kept short or covered with sand to prevent possible spread of fire. All electrical equipment should comply fully with the model code referred to earlier.

No vehicles should enter within 20 feet of the bunds and a concrete ramp should be provided to facilitate on and off loading.

Portable fire equipment should be provided.

3.5. L.P. Gas Storage.

LP gas should not be stored externally as at present and should be sited into separate compounds constructed in accordance with the Health and Safety Executive Code of Practice for the Keeping of Liquefied Petroleum Gas in Cylinders and Similar Containers.