



Department of Petroleum Resources

DPR

DEPARTMENT OF PETROLEUM RESOURCES

PROCEDURES AND CONDITIONS TO BE FULFILLED BEFORE THE GRANT OF APPROVAL AND LICENCE FOR THE CONSTRUCTION / INSTALLATION, MODIFICATION, RELOCATION AND OPERATION OF LIQUIFIED PETROLEUM GAS (LPG) FACILITIES

1. LPG REFILLING PLANT (ABOVEGROUND STORAGE TANKS)
2. LPG REFILLING PLANT (UNDERGROUND STORAGE TANKS)
3. LPG INDUSTRIAL STORAGE (“CATEGORY A”)
4. AUTOMOTIVE LPG STATIONS (AUTOGAS)
5. LPG ADD-ON IN RETAIL STATIONS
6. LPG RESELLERS (“CATEGORY D”)

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PREAMBLE

This Guideline is issued pursuant to the Petroleum Act 1969, Mineral Oils (Safety) Regulations 1997 and the Petroleum Regulations 1967.

This document stipulates the minimum requirements, procedures and conditions to be fulfilled before the grant of approval and licence for the construction / installation, modification, relocation and operation of Liquefied Petroleum Gas (LPG) facilities.

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SECTION I

LPG REFILLING PLANT (ABOVEGROUND STORAGE TANKS)

1. APPLICATION PROCEDURE

All applications that fall, under the above classification shall be addressed to the Director of Petroleum Resources, 7 Kofo Abayomi Street, Victoria Island, Lagos or through the DPR Operations Controller within the jurisdiction of the proposed location or site, giving full details of the proposals. The following documents and design diagrams shall accompany the application.

1.1 STATUTORY DOCUMENTS FOR GRANT OF SITE SUITABILITY APPROVAL

- a. A copy of application letter from the prospective applicant.
- b. A copy of Certificate of Incorporation of the applicant's company.
- c. A copy of current Tax Clearance Certificate.
- d. A Survey Plan of the proposed plot of land.
- e. An application fee, as may be determined by DPR, made payable to "Federal Government of Nigeria - Treasury Single Account (TSA)" on submission of application.

Upon receipt of the application, an inspection will be conducted by DPR officers in line with Section 2.2 (Procedure for Site Inspection) to ascertain the suitability of the site. The validity period of site suitability approval granted is six (6) months.

1.2 STATUTORY DOCUMENTS AND DESIGN DIAGRAMS FOR APPROVAL TO CONSTRUCT AN LPG PLANT

- a. A letter/approval from the appropriate Town Planning Authority, authorizing the siting of the Liquefied Petroleum Gas filling plant at the proposed site. Town Planning approval stamps on all design drawings are accepted.
- b. Two (2) copies of the approved drawings showing the existing or proposed buildings on the site and the relevant distances to the roadways and adjoining properties, if any.
- c. Two (2) copies of Survey plan, duly endorsed by a Registered Surveyor.
- d. Two (2) copies of Piping and Instrumentation Diagram (P&ID) of the LPG filling plant.
- e. Two (2) copies of manufacturers' data sheet of the storage tank(s), where applicable.
- f. Two (2) copies of Codes, Standards and Specification adopted in the design, construction and installation of ancillary equipment.
- g. A provisional approval letter and fire report by Chief Federal/State Fire officer or an

officer authorized by him on his behalf, that he is satisfied with the proposed arrangement for the prevention of fire.

- h. An approval letter from the Divisional Police Officer where the LPG plant will be sited or an officer authorized by him on his behalf, that the plant will not obstruct traffic or constitute any security hazard during its operations.
- i. Certificate of Incorporation of the company
- j. Two (2) copies of Memorandum and Articles of Association of the company showing that the company is duly incorporated to deal in petroleum products.
- k. Current Tax clearance certificate.
- l. A copy of Safety, Health and Environment (SHE) proposal for the proposed plant and Environmental Impact Assessment report of the site for storage capacity above 10 Metric Tonnes
- m. Evidence of payment of application fee, as may be determined by DPR, made payable to "Federal Government of Nigeria - Treasury Single Account (TSA)" on submission of application.

2. PROCEDURES FOR GRANT OF APPROVAL TO CONSTRUCT (ATC) AN LPG PLANT

Prior to the grant of Approval to Construct a proposed LPG plant, it is mandatory that a site suitability approval is granted, and the applicant satisfies the following:

2.1 REVIEW OF DOCUMENTS AND DRAWINGS

The documents and design drawings submitted will be reviewed in line with the required specifications. If the documents and drawings satisfactorily meet the statutory requirements, the site proposed for the plant will be inspected accordingly, otherwise the applicant will be advised to rectify all the shortcomings observed in the application.

2.2 PROCEDURE FOR SITE INSPECTION

On receipt and complete review of the documents as indicated in subsection 2.1 above, a competent officer of the DPR shall be assigned to conduct a site inspection to ascertain the suitability of the site for the proposed project. The site shall be granted approval only when it meets the following criteria:

- a. It does not fall within any pipeline Right of Way (ROW).
- b. The site should be accessible from the road side.
- c. All setbacks by relevant agencies should be observed as it affects overhead electric cables, railway lines and pipelines.
- d. The distance of the proposed LPG storage tank location shall not be less than 15 metres from another property which may be built upon and 50 metres from Public Buildings (hospital, school, park, train/metro stations, mosques, churches, etc.).
- e. The proposed site shall be adequate to accommodate the spacing and safety

distance requirements listed in Table 1 of this Guideline.

- f. The drainages to be constructed or existing ones shall not be channeled to a stream or waterway. Contaminated water should be contained and treated onsite.
- g. The proposed site shall not constitute a threat or hazard to the area.
- h. The proposed site shall not be sited under electric high-tension wire.

2.3 THE SITE INSPECTION REPORT

The proposed site will be inspected to determine the suitability of the location for the plant. The adjoining properties (if any) will be considered accordingly.

If the above listed requirements are met, the Director or Officer assigned by him will grant Approval to Construct (ATC) the LPG plant.

The validity of the ATC shall be for one (1) year. Construction should commence no later than one (1) year after the grant of ATC.

3. CONSTRUCTION PROCEDURE

The conditions governing the construction of Liquefied Petroleum Gas (LPG) filling plant are as follows:

- a. Liquefied Petroleum Gas must be stored under pressure in vessels designed to withstand safely the vapour pressure at maximum temperature. Construction of such vessels must be to an acceptable design code such as:
 - i. The Standards Organization of Nigeria (SON) approved specification for Pressure Vessels and Liquefied Petroleum Gas containers.
 - ii. The American Society of Mechanical Engineers (ASME) boiler and pressure for use in the chemical, petroleum and allied construction, test and certification.
 - iii. The American Petroleum Institute standard for design and construction of LPG Installations (API Standard 2510).
 - iv. The National Fire Protection Association Liquefied Petroleum Gas Code (NFPA 58)
 - v. The British Standards (BS) 1500 PART 1, fusion welded pressure vessels for use in the chemical, petroleum and allied Industries PR BS15500 for new vessels design, construction, test and certification.
- b. The installation/construction of piping, instruments and the plant must be carried out by a DPR accredited Company.
- c. Milestone Construction activities should be witnessed by DPR assigned officers.
- d. Water should be used in testing the LPG tank (hydrotest) and Inert gas should be used for piping's integrity test during pre-commissioning before introduction of hydrocarbon.

- e. The materials used for the construction of the filling shed must be of non-flammable materials.
- f. The filling shed must be open-sided for good ventilation.

4. PROCEDURES FOR LICENSING A NEWLY COMPLETED LPG PLANT.

4.1 PRE-LICENCE INSPECTION

On completion of construction works, the applicant shall notify the nearest DPR office and the following statutory/technical requirements shall be met or provided to facilitate a pre-license inspection of the plant:

Documentation:

- a. A completed application form for the grant of LPG licence.
- b. Prescribed application fee as may be determined by DPR. The LPG licence grant fee shall depend on LPG storage capacity installed at the plant.
- c. Certification from Weights and Measures Division of the relevant Federal Ministry, that the measuring equipment installed at the plant are calibrated satisfactorily.
- d. Certification from Standards Organization of Nigeria (SON) that the LPG tank meets specifications and is safe for operations.
- e. Final fire safety certification issued by Federal or State Fire Department.
- f. Current Company Tax Clearance Certificate.
- g. List and Evidence of trained staff by a DPR accredited consultant.
- h. Two (2) copies of Approved Standard Operating Procedure (SOP) for the proposed LPG plant operations in line with the DPR SOP template.
- i. LPG tank and piping pressure test reports and certification. The Pressure test shall be carried out by a DPR accredited company and witnessed by the Director's assigned officer. The Pressure test should be carried for a new tank at installation before operation and after every Five (5) years. After 20 years of service, pressure test on the LPG tank should be carried out every two (2) years.
- j. Photographs of Plant showing its amenities.

Amenities:

- a. Functional Automated/Manual leak tester.
- b. Functional Fire alarm system and mounted gas detectors at designated areas (Like pump and compressor room, discharge/offloading area and piping connector at the storage vessel, etc).

- c. Reference scale.
- d. Safety warning notices and Personnel Protective Wears for the Plant operators.
- e. Emergency shut down system in at least two locations (At the Gate and operations area).
- f. Visible display of Emergency Telephone numbers of Fire Service, Police and DPR.
- g. Adequate fire water storage, deluge and sprinkler system in line with relevant codes and standards.
- h. Muster Point designated areas should be earmarked in the gas plant.
- i. Car parking areas should be provided outside the gas plant.
- j. Public toilet facilities should be provided at the gas plant.
- k. Demarcation of LPG Storage areas to unauthorized persons and limiting access to filling shed area to only trained personnel.
- l. A fence of at least 2 metres high shall be provided to enclose the LPG plant.

When all the requirements listed above are satisfactorily met, DPR officers will conduct pre-licensing inspection of the plant and its auxiliary equipment. The inspection shall also include the plant operational safety hazard mitigation exercise and EIA compliance.

4.2 PROCEDURE FOR THE GRANT OF LPG OPERATING LICENCE

If the plant is built according to the approved diagrams and the officers of the Department of Petroleum Resources are satisfied with the safety arrangement of the plant, Management will consider the grant of LPG plant operating licence to the deserving company.

All applicants are to note that failure to meet the above statutory and technical requirements or any other which may come into force during or after the construction of the plant, may lead to non-licensing of the plant for operation.

5. PROCEDURE FOR RELOCATION OF EXISTING LPG PLANT TO A NEW SITE

If a company desires to relocate an existing and licensed LPG plant to a new site, the applicant must submit the justification (reasons) for the proposed relocation of the plant to a new site.

The conditions for the grant of Approval to Construct and operating licence for a new LPG plant shall be the same for relocated LPG plants.

6. PROCEDURE FOR RENEWAL OF LPG PLANT OPERATING LICENCE

On expiration of an existing LPG plant operating licence, the Company shall apply to the

nearest DPR office and the following statutory/technical requirements shall be met or provided to facilitate the licence renewal of the LPG plant.

Documentation:

- a. A completed application form for the renewal of LPG licence.
- b. Prescribed application fee as may be determined by DPR. The LPG licence grant fee shall depend on LPG storage capacity installed at the plant.
- c. Renewal fire safety certification issued by Federal or State Fire Department.
- d. Current Company Tax Clearance Certificate.
- e. List and Evidence of trained staff by a DPR accredited consultant.
- f. Two (2) copies of updated Approved Standard Operating Procedure (SOP) for the proposed LPG plant operations in line with the DPR SOP template (If necessary).
- g. LPG tank and piping pressure test reports and certification where applicable. The Pressure test shall be carried out by a DPR accredited company and witnessed by the Director's assigned officer.
- h. Photographs of Plant showing its amenities.
- i. Copy of expired LPG plant operating licence.

Amenities:

- a. Functional Automated/Manual leak tester.
- b. Functional Fire alarm system and mounted gas detectors at designated areas.
- c. Reference scale.
- d. Safety warning notices and Personnel Protective Wears for the Plant operators.
- e. Emergency shut down system in at least two locations (At the Gate and operations area)
- f. Visible display of Emergency Telephone numbers of Fire Service, Police and DPR.

DPR officers will conduct a licence renewal inspection of the plant and auxiliary equipment.

When all the requirements listed above are satisfactorily met, Management will consider the grant of LPG plant operating licence renewal to the Company.

7. GAS STORAGE TANK DESIGN SPECIFICATIONS AND FITTINGS

- a. All tanks for the storage of Liquefied Petroleum Gas shall be designed for a working pressure corresponding to the vapour pressure and at the highest temperature that

the tanks are likely to reach.

- b. All storage tanks shall be fitted with pressure relief valves, pressure gauges and devices for measuring the liquid content and its temperature. The maximum quantity of LPG filled into any tank shall be such that the maximum operating volume it would occupy should not be more than 95% of the capacity of the storage.
- c. Excess flow valve shall be fitted to prevent the loss of Liquefied Petroleum Gases from storage tanks, transport tanks and points where flexible hoses are used.
- d. Remote controlled hydraulically operated shut-off valves shall be fitted to each storage tank.
- e. Water sprinkler system shall be provided on top of the gas vessel. Access ladder to the top of the gas storage shall be provided for inspection and maintenance needs.

8. TANK LOCATION AND RECOMMENDATION OF SAFETY DISTANCES.

8.1 STORAGE VESSELS – LOCATION AND SPACING

Separation distances are intended to protect the LPG facilities from the radiation effects of fires involving other facilities as well as to minimize the risk of escaping LPG being ignited before it is dispersed or diluted.

Storage vessels are normally installed aboveground in the open air but they can be buried underground or mounded. They should never be installed in or on buildings or in open pits. Storage vessels, whether at ground level, underground or mounded, should be spaced and located in accordance with the provisions of this document and other relevant international standards.

The distances given in Table 1 and 2 below indicate the minimum approved horizontal distances between the nearest point on the storage tank and a specified feature, for example an adjacent storage tank, building or boundary. The distances apply to both spherical and cylindrical tanks.

TABLE 1: Minimum Separation distances for above ground liquefied petroleum gas storage tanks within a filling plant

Capacity (Metric Tonnes)		Separation distance (metres)		
Of any single tank	Of any group of tanks	From a building, boundary or fixed source of ignition to tank		Between tanks
		A: No fire wall	B: Fire wall	
5 – 10	5– 10	7.5	4.0	1.0
10.1 – 100	10.1 – 100	15	7.5	1.5
100.1 - 150	100.1 – 150	22.5	11	¼ of sum of the diameter of 2 adjacent vessels
150.1 – 300	150.1 – 300	30	15	

Note: A separation distance of 15 meters should be maintained from the LPG Storage Tank to any class "A" or "B" product storage within the plant.

9. CYLINDER FILLING SHED, OPERATION AND STORAGE

9.1 CYLINDER FILLING SHED

- a. Cylinders shall be filled with LPG only in a building designed for that purpose. Filling buildings shall be open-sided. The filling of cylinders shall not be done in cellars of upper floor in buildings.
- b. Floor should be near ground level or raised up to 1 metre platform height.
- c. No duct or blow-off line shall be directed into or discharged near sewer systems or drains used for other purposes.
- d. Water drains from the filling area should be provided with effective seals.
- e. Piping shall be protected or painted in appropriate industrial colour.
- f. Fire extinguishers in quantities specified by fire service shall be provided at strategic places within the premises and the plant personnel shall have easy access to the extinguisher.
- g. Cylinders shall not be stored in the cylinder filling area. An area within the plant shall be designated for cylinders storage.
- h. Adequate explosion-proof lighting shall be provided to illuminate the working and the storage areas of the plant.
- i. Filling shed flooring shall be covered with spark-resistant material to prevent spark ignition due to any accidental cylinder drop.

9.2 LPG FILLING OPERATION

- a. Cylinders shall be filled accurately and the quantity to be filled in any cylinder should not occupy more than 95% of the total capacity at a temperature not more than 50 degrees centigrade.
- b. The system should be designed in such a way as to minimize Liquefied Petroleum Gas escape when the connection to the cylinder valve is released (disconnected).

9.3 PORTABLE LPG CYLINDERS

Portable LPG cylinders shall be designed, constructed and tested in accordance with the approved Standards Organization of Nigeria (SON) specification for LPG cylinders.

9.4 STORAGE OF LPG CYLINDERS

- a. The layout of the LPG cylinders shall be such as to facilitate quick removal of the cylinders in case of emergency.
- b. Cylinders shall not be in proximity to corrosive or highly flammable substances.
- c. LPG cylinders shall be stored only in a place with adequate ventilation and/or aboveground level, away from cellars, drains hollow etc. where vapour might collect.

- d. LPG cylinders shall not be exposed to excessive heat.
- e. Cylinders shall be stacked in such a manner that they are always accessible for inspection.

9.5 CYLINDER PRESSURE TEST STATION

Cylinders pressure test station shall be provided where the integrity of the cylinders will be tested as prescribed in the Standard Organization of Nigeria (SON) cylinder maintenance code.

The cylinders shall be pneumatically tested with air or LPG as the testing medium.

SECTION II

LPG REFILLING PLANT (UNDERGROUND STORAGE TANKS)

1. APPLICATION

The applicant for the construction of underground LPG plant shall apply in writing to the Director or through the DPR Operations Controller within the jurisdiction of the proposed location or site as stipulated in Section I Paragraph 1 of this Guideline.

1.1 STATUTORY DOCUMENTS AND DESIGN DIAGRAMS FOR APPROVAL TO CONSTRUCT AN LPG PLANT

The documents required in the construction of underground LPG storage plant shall be as stated in Section I subsections 1.1 and 1.2 of this Guideline.

2. PROCEDURES FOR GRANT OF APPROVAL TO CONSTRUCT (ATC) AN LPG PLANT

The procedure for the grant of Approval to Construct an underground LPG tank shall be in accordance with the provisions of Section I subsections 2.1, 2.2 and 2.3 of this Guideline.

3. CONSTRUCTION PROCEDURE FOR UNDERGROUND LPG FACILITIES

In addition to the provisions of Section I Paragraph 3 of this Guideline, the following shall be applicable for underground LPG plants:

- a. No tank or tanks shall be buried without DPR approval and the burial must be witnessed by DPR
- b. All tanks to be buried should meet all the specifications of the manufacturer, ASTM, and other internationally approved codes
- c. The excavation of the pit for the LPG storage tank shall permit allowance of not less than 70 centimeters below ground level when the tank has been set in its final position.
- d. The tank shall be set in a chamber of waterproof concrete of not less than 23 centimeters thick and the top a water tight detachable or removable concrete slab with a manhole at the center.
- e. The manhole of every tank installation shall be raised above the level of the surrounding ground to prevent the ingress of surface water into it.
- f. All pipings below ground level, shall be protected against damage and corrosion to the satisfaction of the Department of Petroleum Resources.
- g. All individual tanks shall be provided with efficient electrical earth connections independent of pipe connections, having a current not exceeding 10 Ohms when measured by an earth resistance tester “Megger” or similar type.
- h. All fixed pipes shall be of metal or fiberglass coated and shall be in a position where they may not be liable to damage.
- i. Minimum separation distances for underground or mounded tanks of 10 Tons capacity or less shall be 3 meters and 7.5 meters for tanks above 10 tons capacity.
- j. Distances for all underground and mounded storage tanks shall be measured from the pressure relief valve and the filling connection.

4. PROCEDURE FOR LICENSING A NEWLY COMPLETED LPG PLANT

4.1 PRE-LICENCE INSPECTION

The licence procedure shall be the same as in Section I subsection 4.1 of this Guideline.

When all the requirements listed are satisfactorily met, DPR officers will conduct pre-licensing inspection of the plant and auxiliary equipment.

4.2 PROCEDURE FOR THE GRANT OF LPG OPERATING LICENSE

It shall be the same as stipulated in Section I subsection 4.2 of this Guideline.

5. PROCEDURE FOR RELOCATION OF EXISTING LPG PLANT TO A NEW SITE.

The procedures shall be the same as stipulated in Section I Paragraph 5 of this Guideline.

6. PROCEDURE FOR RENEWAL OF LPG PLANT OPERATING LICENCE

The procedures shall be the same as stipulated in Section I Paragraph 6 of this Guideline.

7. GAS STORAGE TANK DESIGN SPECIFICATIONS AND FITTINGS

The procedures shall be the same as stipulated in Section I Paragraph 7 of this Guideline.

8. TANK LOCATION AND RECOMMENDATION OF SAFETY DISTANCES.

Spacing considerations shall be as stipulated in Section I subsection 8.1, Table 1 and 2 of this Guideline.

9. CYLINDER FILLING SHED, OPERATION AND STORAGE.

The procedures shall be the same as stipulated in Section I subsections 9.1 to 9.5 of this Guideline.

SECTION III

LPG INDUSTRIAL STORAGE (“CATEGORY A”)

This Guideline shall deal on industrial LPG storage installations, where LPG is stored under pressure at ambient temperature in fixed vessels larger than 500kg capacity.

1. LPG STORAGE – FIXED TANKS

- a. The installation or construction of a Liquefied Petroleum Gas (LPG) storage tank, together with any associated pipe work connecting the system to a combustion appliance providing space or water heating, or cooking facilities shall be designed, constructed and installed in accordance with the requirements set out by the relevant codes and standards mentioned in this guideline.
- b. Every tank shall be separated from a building or fixed source of ignition in line with separation distances of Table 1, to reduce the risk of fire spreading to the tank in the event of fire, to enable and/or maintain safe dispersal of LPG.
- c. Tanks should be situated outdoors in a position that will not allow accumulation of vapour at ground level.
- d. Ground features such as open drains, manholes, gullies and cellar hatches, within the separation distances should be sealed or trapped to prevent the passage of LPG vapour.
- e. All safety features applicable to above ground LPG storage should also apply to LPG Industrial storage (category A).

2. LPG STORAGE - CYLINDERS

Where LPG storage installation consists of a set of cylinders, the installation should be in accordance with relevant codes and standards mentioned in this guideline.

- a. The construction or installation of cylinders should be in form of two or more sets of paired cylinders connected to a manifold, with supply provided from one pair of cylinders at any time.
- b. The installations should enable cylinders to stand upright, secured by straps or chains against a wall outside the building.
- c. The cylinders should be positioned on a firm, level base such as concrete of at least 50mm in thickness or a paving slab bedded on a mortar. It should be located in a well-ventilated position at ground level, so that the cylinder valves will be at least 1m horizontally and 300mm vertically from openings in the buildings or from sources such as flue terminal or tumble dryer vents. The cylinders should also be at least 2m horizontally from untrapped drains, unsealed gullies or cellar hatches unless an intervening wall not less than 250mm high is present.

- d. Cylinders should be readily available, reasonably protected from physical damage and shall be located where they do not obstruct exit routes from the building.

3 STATUTORY DOCUMENTS FOR LICENCING OF LPG CATEGORY A FACILITY

The applicant shall apply in writing to the Director or through the DPR Operations Controller within the jurisdiction of the proposed location or site. The application shall be accompanied by the following documents:

- a. A completed application form for the grant of LPG licence.
- b. Certificate of Incorporation of the company
- c. Two (2) copies of Memorandum and Articles of Association of the company.
- d. Current Tax clearance certificate for the preceding three years.
- e. Two (2) copies of manufacturers' data sheet of the storage tank(s), where applicable.
- f. Two (2) copies of Codes, Standards and Specification adopted in the design, construction and installation of ancillary equipment.
- g. Certification from Standards Organization of Nigeria (SON) that the LPG tank meets specifications and is safe for operations.
- h. Current fire safety certification issued by Federal or State Fire Department.
- i. An application fee, as may be determined by DPR, made payable to "Federal Government of Nigeria - Treasury Single Account (TSA)" on submission of application.
- j. LPG tank and piping pressure test reports and certification. The Pressure test shall be carried out by a DPR accredited company and witnessed by Director's assigned officer.
- k. Approved Standard Operating Procedure (SOP) for the proposed LPG category A storage operations in line with the DPR SOP template, where applicable.
- l. Photographs of LPG category A storage, showing its amenities.

Amenities:

- a. Functional Fire alarm system/Gas detector/Leak tester
- b. Safety warning notices and Personnel Protective Wears
- c. Adequate fire extinguishers.
- d. Emergency shut down system.
- e. Visible display of Emergency Telephone numbers of Fire Service and DPR.

4 GRANT OF LPG CATEGORY A STORAGE LICENCE

4.1 Pre-licensing Inspection

On completion of construction/installation works, the applicant shall notify the nearest DPR office and the above statutory/technical requirements shall be met or provided to facilitate a pre-license inspection of the company's premises.

4.2 Grant of Licence

When all the requirements listed above are met and the DPR officers are satisfied with the safety arrangement of the LPG storage, Management will consider the grant of LPG "Category A" storage licence to the deserving company. This licence enables the licensee to consume the LPG product within their premises and NOT to dispense or sell to the public.

All applicants are to note that failure to meet the above statutory and technical requirements or any other which may come into force during the construction/installation of the storage, may lead to non-licensing of the storage for operation.

SECTION IV

AUTOMOTIVE LPG STATIONS (AUTOGAS)

1. APPLICATION PROCEDURE

See Section I Paragraphs 1; 2; 3; 4 for guidance.

2. SEPARATION DISTANCES BETWEEN ITEMS WITHIN THE SERVICE STATION

The separation distances between items within the service station should not be less than those specified in Table 2.

TABLE 2: Minimum Tank Safety Distance at LPG Autogas Station

Tank Capacity (Metric Tonnes)	Under Ground Tanks to the nearest fence, dispenser (m)	Above Ground Tanks to the nearest fence, dispenser (m)	Safety Distance Between Tanks (m)
1.0 – 5.0	3	5	1
5.1 – 10.0	5	7.5	1

- a. The maximum allowable combined LPG Autogas storage tank capacity is 10MT
- b. The safety distances related with underground tanks are measured starting from the safety valve.
- c. The safety distances related with aboveground tanks are measured starting from the tank’s nearest tip surface to the related location.
- d. The minimum safety distance of Underground or Above ground LPG tank should be 50 meters with respect to highways and public buildings.
- e. There is no need for any safety distances between tank and pumping units

SECTION V

LPG ADD-ON IN RETAIL OUTLETS (PETROL STATIONS)

1. INTRODUCTION

The purpose of this Guideline is to regulate in an orderly and effective manner, all aspects relating to LPG Add-On (operations) in retail outlet activities in Nigeria.

LPG Add-On operations is the introduction of LPG refilling activities in licenced retail outlets. The expected allowable LPG storage capacity shall be as follows:

- A. One (1) Tonne to Five (5) Tonnes.
- B. For applications on LPG storage capacity greater than 5 Metric Tonne, the applicant shall apply for a stand-alone, fully autonomous gas plant as contained in Section I of this Guideline.
- C. At least 1,300 square meters of land size is required for any retail outlet to accommodate LPG Add-on.

1.1 APPLICABLE CONDITIONS FOR LPG ADD-ON IN RETAIL OUTLETS

The DPR will frequently monitor LPG operations to assess the level of risk, amount of product, familiarity with company operation, procedure and track records. DPR shall stop any LPG operation or prohibit planned operations due to safety concerns or unacceptable risk.

1. The add-on must not have adverse impact on the operations of the retail-outlets.
2. There must be physical demarcation (Wire mesh, wire fence, bollards, etc) for the LPG. Only trained and authorized operators should have access to the demarcated area.
3. There must be a minimum distance of 5 meters from underground fuel storage tanks.
4. All LPG vessel storage tanks intended for retail-outlet must be skid-mounted and of a maximum capacity of 5 Metric Tons.
5. All skid mounted LPG bottles/dispensing units must not be containerized in Autogas or LPG standalone skid.
6. For applications on LPG storage capacity greater than 5 Metric Tonnes, the applicant must apply for a stand-alone, fully autonomous gas plant.
7. Safety audit must be carried-out annually by a DPR accredited company before renewal of operating licence.

1.2 APPLICATION PROCEDURE

Application for LPG Add-On in retail outlets shall be forwarded to the Director, Department of Petroleum Resources (DPR), 7, Kofo Abayomi Street, Victoria Island, Lagos or through the DPR Operations Controller within the jurisdiction of the proposed location or site, giving full details of the proposals.

All applications shall be accompanied with:

- 1) A copy of the current storage and sales licence of the retail outlet.
- 2) The retail outlet as-built layout drawing.
- 3) Proposed layout drawing for the LPG Add-On indicating safety distances.
- 4) Fire safety certification issued by Federal or State Fire Department on the proposed LPG Add-On.
- 5) Relevant town planning approval for the proposed LPG Add-on.
- 6) Application fees, in accordance with the existing template for LPG plants.

1.1 SAFETY DISTANCES FOR LPG ADD-ON

TABLE 3: Safety Distances for Liquefied Petroleum Gas add-on in retail outlet

Maximum capacity (in Metric Tonnes)		Maximum separation distance for above ground tanks (in metres)		
Of any single tank	Of any group of tanks	From a building boundary or fixed source of ignition to the tank		Between tanks
		A No fire wall	B With fire wall	
1- 5	1- 5	5.0	2.5	1.0

2. PROCEDURE FOR LICENSING A NEWLY COMPLETED LPG ADD-ON

2.1 PRE-LICENCE INSPECTION

The licence procedure shall be the same as in Section I subsection 4.1 of this Guideline.

When all the requirements listed are satisfactorily met, DPR officers will conduct pre-licencing inspection of the plant and auxiliary equipment.

2.2 PROCEDURE FOR THE GRANT OF OPERATING LPG ADD-ON LICENCE

It shall be the same as stipulated in Section I subsection 4.2 of this Guideline.

3. PROCEDURE FOR RENEWAL OF LPG ADD-ON OPERATING LICENCE

The procedures shall be the same as stipulated in Section I Subsection 6 of this Guideline.

4. OPERATIONS

The procedures shall be the same as stipulated in Section I Subsection 7 of this Guideline.

SECTION VI

LPG RESELLERS (“CATEGORY D”)

1. INTRODUCTION

The purpose of this Guideline is to regulate in an orderly and effective manner, all aspects relating to LPG resellers outlets/locations: “Category D”.

1.1 APPLICABLE CONDITIONS FOR LPG RESELLERS OUTLETS/LOCATIONS

- a. The shop or outlet should be situated in a fixed location and not be mobile operated.
- b. The shop should be at least 3m by 4m (minimum). The shop should be well-ventilated.
- c. Any intending retailer should have at least 40 cylinders of 12.5kg in size or a combination of 50kg, 25kg, 12.5kg, 6kg and 3kg cylinders totaling up to 500kg.
- d. The cylinders shall be stacked as follows:
 - i. 6kg and 12.5kg cylinders shall be stacked not more than three levels high,
 - ii. 25kg cylinders shall be stacked not more than two levels high
 - iii. 50kg cylinders shall be stacked singly.
- e. The shop should be adequately ventilated and should have a rack of dimension 6 by 2 by 7 feet of non-flammable material
- f. The shop or outlet shall not be in a residential building and should be at least 15 meters away from the road and any source of ignition.
- g. Fire extinguishers shall be strategically installed in the shop or outlet. Such equipment shall include a minimum of two 5kg (CO₂ and powder) fire extinguishers, a sand bucket painted red and other facilities as may be required by the relevant safety agencies.
- h. Emergency telephone numbers of firefighting agencies, DPR and the police shall be conspicuously displayed in the shop or location where gas is retailed.
- i. Reseller’s outlets should not be located near the following places: Motor parks, Mechanic workshops, Blacksmiths or Welder’s workshops and other similar places that handle flammable materials.
- j. LPG cylinder-to-cylinder rebottling, refilling and decanting is prohibited.
- k. The layout of the cylinders should be such as to facilitate quick removal of the cylinders in case of emergency.
- l. All stipulated setbacks by relevant Agencies (ERCN, NCC, Railways, Highways, Pipelines, etc) should be met.
- m. All electrical wiring in LPG retail outlets should be in conduit.

- n. All LPG reseller outlets should be strictly for the sales of LPG only.
- o. All LPG reseller shops should have concrete roofing.
- p. All LPG reseller should keep a calibration certificates of weighing machines in their shops

1.2 LICENCING PROCEDURE

Application for LPG resellers licence shall be forwarded to the Director, Department of Petroleum Resources (DPR), 7, Kofo Abayomi Street, Victoria Island, Lagos or through the DPR Operations Controller within the jurisdiction of the proposed location or site, accompanied by the following documents:

- a. Completed Application form, duly endorsed by a licenced LPG refilling plant operator
- b. Business Registration/Certificate of Incorporation
- c. An application fee, as may be determined by DPR, made payable to "Federal Government of Nigeria - Treasury Single Account (TSA)" on submission of application.
- d. Fire safety certification issued by Federal or State Fire Department.
- e. Tax Clearance Certificate, where applicable.
- f. Photographs of shop location showing its amenities.

When all the requirements listed above are satisfactorily met, DPR officers will conduct pre-licencing inspection of the plant and auxiliary equipment.

SECTION VII

GENERAL REQUIREMENTS

1 DESIGN AND INSTALLATION

1.1 GENERAL DESIGN

Vessels, vessel fittings, pumps, dispensing systems, hoses, filling nozzles, valves, and adaptors and breakaway/pull-away systems shall be designed for efficient and safe operations in line with applicable codes and standards.

1.2 INSTALLATION

The installation and commissioning of the system shall only be undertaken by competent personnel, and in accordance with manufacturer's instructions. Written procedures shall be drawn up for installation and/or commissioning.

The provisions of the Mineral Oils Safety Regulations (MOSR) 1997 should be observed in all installations. All necessary measures to reduce risk as low as reasonably practicable should be taken, including the replacement of the hazardous by the non-hazardous or by the less hazardous substances.

1.2.1 Storage Vessels

Storage vessels should be installed in accordance with the provisions of this Guideline and other relevant international standards.

1.2.2 Pumps

Pumps, other than submersible types, should be adequately secured to a concrete foundation or bolted to a structural steel support. Where the drive unit is not integral with the pump, attention should be given to ensure correct alignment, and all moving parts should be suitably guarded.

1.2.3 Dispensing Equipment

Dispensing equipment should be securely fixed to avoid strain on connections under normal working conditions. On a petrol forecourt site, such valves should be immediately upstream of the shear valve or excess flow valve protecting the meter.

1.2.4 Pipework and Valves

Pipework should be run as directly as is practicable from one point to another and with as few restrictions such as elbows, bends etc., as conditions will permit. The location of underground pipework should be recorded and indicated by appropriate means. It is essential that the piping system is cleaned prior to commissioning.

1.2.5 Wiring and Cables

Wiring and cables that may be exposed to a flammable atmosphere must be suitably enclosed where appropriate. The installation should comply with MSA EN 60079-14:2003 and BS 7671:2001, or their equivalent international Standards.

1.2.6 Earthing and Bonding

The installation should have electrical continuity, be effectively connected to earth and bonded to comply with the requirements of the Institute of Petroleum's Model Code of Safe Practice, Part 1, Electrical and BS 7671:2001 or equivalent international standard.

1.2.7 Electrostatic Hazard Precautions

An effective earthing point and/or bonding connection on the storage vessel should be provided for discharging static electricity from bulk delivery tankers, prior to commencing each delivery of LPG to the main storage.

1.2.8 Master Switches

In addition to the site main isolator controlling the electrical installation, a separate isolation switch should be provided to isolate the supply to the LPG installation. This should be so positioned as to be readily visible and within easy reach for quick operation in cases of emergency.

2 FIRE PROTECTION AND SECURITY

2.1 FIRE PROTECTION

The possibility of a major fire outbreak, leading to direct flame impingement on the storage vessel, can be minimized by sound engineering practices, proper plant design and layout. Of similar importance are good operating practices and proper instruction and training of personnel on both routine operations and on action to be taken in emergency.

2.1.1 Portable Fire Extinguishers

At least two dry powder fire extinguishers less than 9kg each and suitable for LPG fires with a test fire rating of at least 21A and 183B as defined in MSA EN 3-7:2004 should be readily available at strategic locations to deal with fires adjacent to the meter/vehicle being filled.

2.1.2 Water Reservoir

Stations storing LPG should have a clean water reservoir of minimum size 15 cubic metres.

2.2 SECURITY

Adequate steps should be taken to prevent the unauthorised interference with vessels and ancillary equipment such as lockable covers. When the site is closed the equipment should be protected from unauthorised interference or operation by isolation of electrical supplies, locking nozzles and locking of cabinet doors of ancillary equipment.

2.2.1 Warning Notices

All notices shall be conspicuous and easily understood by those to whom they are directed. Where possible they should conform to EN 92/58 - Safety Signs and Colours, or equivalent, and where relevant, to the Work Place as provided in the Mineral Oils (Safety) Regulation 1997.

2.2.2 Dispensing Control Device

A notice of the form below should be displayed.

**LIQUEFIED PETROLEUM GAS
HIGHLY FLAMMABLE
SWITCH OFF ENGINE
APPLY HANDBRAKE
NO SMOKING - NO NAKED FLAMES
SWITCH OFF MOBILE PHONES
USE SPARK ARRESTOR ON CAR EXHAUST**

Pictorial representation may be used.

Master Switch Notice: A notice of the form below should be displayed.

“LPG PUMP - SWITCH OFF HERE”

2.2.3 Emergency Telephone Number

An emergency telephone number for summary assistance should be displayed at sites accessible to the public in a position where it can be seen even if the site is closed.

3. COMMISSIONING

Storage vessels, other equipment and piping should be commissioned after installation in accordance with manufacturer’s instructions, including a pressure test of the vessel and its fittings. Upon completion and commissioning, an Approval to Operate the LPG facility will be granted to the applicant

4. OPERATIONS

All LPG storage plants shall be licensed by the DPR and manned by competent persons.

Written procedures should be established for relevant personnel to understand their roles for normal operation and closing (out of hours) of the refueling facilities, and for the reception of road tanker deliveries.

Note: Stand-by weighing apparatus shall be kept to confirm volumes of LPG sold to customers by DPR officials.

4.1 TRAINING OF PERSONNEL

Training is vital to help prevent incidents and to minimize the consequences should an incident occur. Employees who may be called upon to use the filling equipment must have adequate training in its proper use, and the action required in the event of malfunction or to deal with an emergency.

The training may take many forms, including the giving of instructions (verbal or written) and formal training courses. All training should be recorded.

4.2 ACTION IN AN EMERGENCY OTHER THAN FIRE

In the case of a substantial spillage or a leak of LPG, isolate the electric supply to all fuel dispensers, stop the flow of LPG if possible, call the nearest Fire Department, keep personnel and members of the public away from the area in which the vapour is spreading, alert neighbours to the danger, especially if there are nearby cellars or basements in which vapour could collect, if necessary, call the police so that they may re-route traffic and advise the Department and other appropriate authorities of the incident.

5. INSPECTION & MAINTENANCE

The installation shall have to conform with any legal inspection and maintenance regulations pertaining to the conditions of its licence.

It is required of the user to ensure that a *Written Scheme of Periodic Examination* is drawn up by a competent person. The user shall ensure that the system is properly maintained to prevent danger.

When used at point of sale, meters need to be maintained to ensure dispensing liquid LPG within the tolerances specified in DPR guidelines.

6 SURVEY AND MAINTENANCE

Surveys and maintenance shall be carried out in accordance with a documented programme in line with the suppliers' recommendations and/or based on the Mineral Oils (Safety) Regulations 1997

7 FIRE WALLS

7.1 PURPOSE

The purpose of a firewall is to protect the vessel or vessels from thermal radiation from a fire nearby and to ensure adequate dispersion distance to boundaries, buildings and sources of ignition for LPG leaking from the vessel or its fittings where normal separation distances cannot be achieved.

7.2 SIZE AND CONSTRUCTION OF FIREWALLS

Fire walls should be imperforated and substantially constructed from brick, concrete or solid masonry and be capable, if tested in accordance with BS 476 part 20 and the relevant criteria of BS 476 parts 20 and 21 (formerly BS 476 part 8) of achieving 30 minute fire resistance or, where fire wall form part of residential accommodation, 60 minute fire resistance.

For vessels up to and including 1.1 tonnes LPG capacity, they should not be less than the height of the vessel. For larger vessels they should be not less than 2 meters high or the height of the vessel, whichever is the greater.

Form vessels boarding on fence wall, such fence should be reinforced with concrete and the distance of the vessels to the fence wall should be at least 2.5 meters.

7.3 SITING

Fire walls should be sited at least 2.5 m from the nearest point of the vessel and may permit

the distance from the vessel to buildings, boundaries, etc. to be reduced to values given in this Guidelines. However, this distance can only be reduced if the distance from the vessel to these features around the end of the fire wall is at least that given in this Guideline.

Fire walls should not be provided on more than two sides and normally only on one side. In all cases the natural ventilation should not be significantly impaired.

Note: Safety distances without firewalls in all cases should be observed in all LPG facilities. Only the Director of Petroleum Resources or his delegated authority shall approve the use of a fire wall in exceptional circumstances.

SECTION VIII

PENALTY FOR CONTRAVENTION

Any operator who contravenes the provisions of these guidelines shall be sanctioned in accordance with the Petroleum Regulations, 1967 (as amended) and the Mineral Oil (Safety) Regulations, 1997 and other extant regulations and/or guidelines.

Department of Petroleum Resources

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