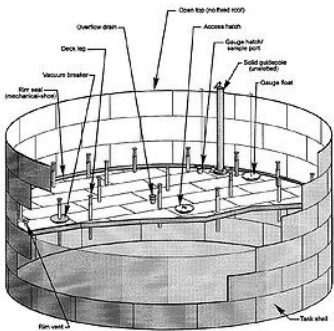


# Atlantik Finanz AG

## EXHIBIT-I TECHNICAL REQUIREMENTS OF ABOVE GROUND TANKS IRAQ-ERBIL

Job No: 8831.503.593.89



### 110,000 bpd OIL REFINERY

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REV:01



# Technical Requirements For Aboveground Storage Tanks (ASTs) Storing Class IIIB Liquids

References:  
Comm 10 / NFPA 30 2003 EDITION

ITEM DESCRIPTION	Comm 10 / NFPA
FLASH POINT	<p><b>NFPA 30 1.7.3.1 Combustible Liquid</b>, Class IIIB Any liquid that has a flash point at or above 200 degree F.</p> <p>Flash point identified on the Material Safety Data Sheet (MSDS) is the reference.</p>
DEFINED AND REGULATED AS A COMM 10 TANK	<p>Comm 10 effective July 2002</p> <p>Exempt:</p> <ul style="list-style-type: none"> <li>◆ UST less than 60 gal.</li> <li>◆ AST less than 110 gal.</li> </ul>
<b>Significant Changes - Effective Date of Pending Code Revision</b>	
PLAN REVIEW REQUIREMENTS	Required for all USTs and ASTs larger than 1,100 gallon capacity. Comm 10.100(1)(b)3
REGISTRATION REQUIREMENTS	Required for all USTs and ASTs larger than 1,100 gallon capacity. Comm 10.140(1)(a)3
CONSTRUCTION STANDARD	<p>Comm 10.400(1) (c) <i>Tanks for Class IIIB liquids</i>. Tanks of 1,100 gallon or more capacity used for aboveground storage of Class IIIB liquids shall be listed or shall be acceptable to the department. (Accepted listings below)</p> <p>Comm 10.250(2) CONSTRUCTION. (a) Except as allowed under par. (b), tanks containing flammable or combustible liquids shall be constructed to one of the recognized design standards in NFPA 30 or a standard approved by the department.</p> <p><b>Note:</b> Design standards recognized by NFPA 30 include API 12B, API 12D, API 12F, API 620, API 650, UL 58, UL 80, UL 142, UL 1316, UL 1746, UL 2080, UL 2085 and UL 2386.</p> <p><u>IBCs</u> UL 2386 is the fire exposure test standard for IBC rated/approved for combustible liquid handling. The UL mark states specifically: "These requirements cover intermediate bulk containers (IBC's) intended for the storage of flammable and combustible liquids within warehouses and other storage areas protected with automatic wet-pip sprinkler systems."</p> <p>NFPA 30 Chapter 4 addresses IBCs up to 800 gallon capacity..</p>
ANNUAL INSPECTION	No
<b>Effective for tanks installed after July 1, 2002 (Scope of technical application in NFPA 30-4.1.1)</b>	
PLAN REVIEW REQUIREMENTS	Required for all USTs and ASTs regulated by Comm 10. Comm 10.10(1)
REGISTRATION REQUIREMENTS	Required. Comm 10.13
TANK DESIGN & CONSTRUCTION REQUIREMENTS (CONSTRUCTION MATERIAL)	<p>NFPA 30- 4.2.2 Materials of Construction. Tanks shall be designed and built in accordance with recognized good engineering standards for the material of construction being used. Tanks shall be of steel or other approved noncombustible material, with the following limitations and exceptions:</p> <p>(a)The materials of construction for tanks and their appurtenances shall be compatible with the liquid to be stored. In case of doubt about the properties of the liquid to be stored, the supplier, producer of the liquid, or other competent authority</p>

	<p>shall be consulted.</p> <p>(b) Tanks shall be permitted to be constructed of combustible materials only when approved by the authority having jurisdiction. <u>Tanks constructed of combustible materials shall be limited to the following:</u></p> <p>(1) Underground installation  (2) Use where required by the properties of the liquid stored  (3) Aboveground storage of Class IIIB liquids in areas not exposed to a spill or leak of Class I or Class II liquid  (4) Storage of Class IIIB liquids inside a building protected by an approved automatic fire-extinguishing system.</p> <p>NFPA 30-4.2.3.1 Design Standards for Atmospheric Tanks.  4.2.3.1.1 Atmospheric tanks, including those incorporating secondary containment, shall be designed and constructed in accordance with recognized standards or approved equivalents. Atmospheric tanks that meet any of the following standards shall be deemed as meeting the requirements of 2.2.3: API 12B, API 12D, API 12F, API 650, UL 80, UL 142, UL 2080 and UL 2085</p> <p><i>Comm 10.400(1)(c) Tanks for Class IIIB liquids. Tanks of 1,100 gallon or more capacity used for aboveground storage of Class IIIB liquids shall be listed or shall be acceptable to the department</i></p>
TANKS IN BUILDINGS	<p><b>NFPA 30-4.3.4</b> shall apply to installations of tanks storing Class I, Class II, and Class IIIA liquids in storage tank buildings. This subsection shall not specifically apply to such tanks in process areas. (See Chapter 7.) <b>Tanks storing Class IIIB liquids shall not be required to comply with the provisions of this subsection.</b> However, adequate space must be provided for both tank and building maintenance.</p> <p>A tank installation that has a canopy or roof that does not limit the dissipation of heat or dispersion of flammable vapors and does not restrict fire-fighting access and control shall be treated as an outside aboveground tank.</p>
TANK SPACING TANK-TO-TANK	<p><b>NFPA 30-4.3.2.2 Shell to shell spacing between any two adjacent aboveground tanks.</b> Tanks storing Class I, II, III stable liquids shall be separated by the distances given in Table 4.3.2.2.1. [Table at end of document.]</p> <p><u>Exception:</u> Tanks used only for storing Class IIIB Liquids need not be separated by more than 3 feet provided they are not within the same diked area as or drainage path of a tank storing a Class I or II liquid.</p>
TANK TO PROPERTY LINE THAT CAN BE BUILT UPON AND TANK FROM IMPORTANT BUILDING	<p>NFPA 30-4.3.2.1.5 Tanks storing Class IIIB stable liquids shall be located in accordance with Table 4.3.2.1.5.</p> <p><u>Exception:</u> If located within the same diked area as or the drainage path of a tank storing a Class I or Class II liquid, the tank storing Class IIIB liquid shall be located in accordance with 4.3.2.1.1.</p> <p>NFPA 30 TABLE 4.3.2.1.5 CLASS IIIB LIQUIDS. [Table at end of document.]</p> <p><b>NOTE:</b> For tanks used for vehicle fueling refer to NFPA 30A.</p>
COLLISION PROTECTION	Yes - NFPA 30-4.3.2.7
OVERFILL PROTECTION	Refer to NFPA 30-4.6.1.5 A sight gauge is acceptable for Class IIIB liquid storage.
SECONDARY CONTAINMENT – SPILL PREVENTION	No - <b>Not required for Class IIIB liquids - NFPA 30- 2.3.2.3 Control of spills from aboveground tanks.</b> Every tank that contains a Class I, Class II, or Class IIIA liquid shall be provided with means to prevent an accidental release of liquid from endangering important facilities and adjoining property or from reaching waterways.
FOUNDATION SUPPORTS AND PROTECTION	<b>No - Excludes Class IIIB</b> - NFPA 30-2.3.1.3 Steel structures or exposed piling for tanks storing Class I, Class II, or Class IIIA liquids shall be protected by materials having a fire resistance rating of not less than 2 hours.

PIPING SYSTEMS	<b>NFPA 30-Chapter 3 – Piping Systems.</b> 30-3.1.1 This chapter shall apply to piping systems consisting of pipe, tubing, flanges, bolting, gaskets, valves, fittings, flexible connectors, the pressure-containing parts of other components such as expansion joints and strainers, and devices that serve such purposes as mixing, separating, snubbing, distributing, metering, controlling flow, or secondary containment of liquids and associated vapors.
ANTI SYPHON	NFPA 30-3.5.6 Valves. Piping systems shall contain a sufficient number of valves to operate the system properly and to protect the equipment. Piping systems in connection with pumps shall contain a sufficient number of valves to properly control the flow of liquid both in normal operation and in the event of physical damage. Each connection to a piping system by which equipment such as tank cars, tank vehicles, or marine vessels discharges liquids into storage tanks shall be provided with a check valve for automatic protection against back-flow if the piping arrangement is such that back-flow from the system is possible.
NORMAL VENTING (ATMOSPHERIC)	<b>Yes</b> <b>NFPA 30 2.2.5.1 Normal venting for tanks.</b> Atmospheric storage tanks shall be adequately vented to prevent the development of vacuum or pressure that can distort the roof of a cone roof tank or that exceeds the design pressure of other atmospheric tanks when filling or emptying the tank or because of atmospheric temperature changes. <b>NFPA 30 3.7.1 Vent Piping For Aboveground Tanks.</b> <i>Vent may terminate inside the building</i>
EMERGENCY VENTING	<b>Yes</b> <b>NFPA 2.2.5.2 Emergency relief venting for fire exposure for aboveground tanks.</b> NFPA 2.2.5.2.1 Every aboveground storage tank shall have emergency relief venting in the form of construction or a device or devices that will relieve excessive internal pressure caused by an exposure to fire. This requirement shall also apply to each compartment of a compartmented tank, the interstitial space of a secondary containment-type tank, and the enclosed space of tanks of closed-top dike construction. This requirement shall also apply to spaces or enclosed volumes, such as those intended for insulation, membranes, or weather shields that can contain liquid because of a leak from the primary vessel and can inhibit venting during fire exposure. The insulation, membrane, or weather shield shall not interfere with emergency venting. <u>Exception:</u> Tanks storing Class IIIB liquids that are larger than 285 bbl capacity (a barrel or bbl is 42 US gallons) and are not within the diked area or the drainage path of tanks storing class I or Class II liquids do not need to meet this requirement. <i>Vent may terminate inside the building</i>
TEMPORARY OR PERMANENT REMOVAL	<b>NFPA 30-2.6.4.1 Closure of Storage Tanks.</b> Aboveground tanks taken out of service or abandoned shall be emptied of liquid, rendered vapor-free, and safeguarded against trespassing. Comm 10.460 Closure requirements. Comm 10.465 Closure assessment requirements.
RE-USE	<b>NFPA 30-2.6.4.2 Reuse of Aboveground Storage Tanks.</b> Only those used tanks that comply with the applicable sections of this code and are approved by the authority having jurisdiction shall be installed for flammable or combustible liquids service.
<b>Effective for all Class IIIB storage tanks</b>	
REGISTRATION REQUIREMENTS	Required. Comm 10.13

Table 2.3.2.1.5 Class IIIB Liquids

<b>Tank Capacity (gal)</b>	<b>Minimum Distance from Property Line that Is or Can Be Built Upon, Including the Opposite Side of a Public Way (ft)</b>	<b>Minimum Distance from Nearest Side of Any Public Way or from Nearest Important Building on the Same Property (ft)</b>
12,000 or less	5	5
12,001 to 30,000	10	5
30,001 to 50,000	10	10
50,001 to 100,000	15	10
100,001 or more	15	15

Table 2.3.2.1.1(b) Reference Table

<b>Tank Capacity (gal)</b>	<b>Minimum Distance from Property Line that Is or Can Be Built Upon, Including the Opposite Side of a Public Way (ft)</b>	<b>Minimum Distance from Nearest Side of Any Public Way or from Nearest Important Building on the Same Property (ft)</b>
275 or less	5	5
276 to 750	10	5
751 to 12,000	15	5
12,001 to 30,000	20	5
30,001 to 50,000	30	10
50,001 to 100,000	50	15
100,001 to 500,000	80	25
500,001 to 1,000,000	100	35
1,000,001 to 2,000,000	135	45
2,000,001 to 3,000,000	165	55
3,000,001 or more	175	60

Table 2.3.2.1.2

<b>Type of Tank</b>	<b>Protection</b>	<b>Minimum Distance in Feet from Property Line that Is or Can Be Built Upon, Including the Opposite Side of a Public Way</b>	<b>Minimum Distance in Feet from Nearest Side of Any Public Way or from Nearest Important Building on the Same Property</b>
Any type	Protection for exposures*	1 1/2 times Table 2.3.2.1.1(b) but shall not be less than 25 ft	1 1/2 times Table 2.3.2.1.1(b) but shall not be less than 25 ft
	None	3 times Table 2.3.2.1.1(b) but shall not be less than 50 ft	1 1/2 times Table 2.3.2.1.1(b) but shall not be less than 25 ft