

TO: ENVIRONMENTAL EVALUATION COMMITTEE

AGENDA DATE: December 15, 2022

FROM: PLANNING & DEVELOPMENT SERVICES AGENDA TIME 1:30 PM/ No. 2

Conditional Us PROJECT TYPE: <u>Jesus &amp; Liliana</u>	e Permit #22-0021 a Aguirre (Aguirre's P	ropane, LLC) SUPEF	RVISORY DISTRICT: #4
LOCATION:1338 Glend	ale AvenueAl	PN: <u>014-031-00</u>	5-000
	A 92274 Irban Area (West Sho	PARCEL SIZE:	+/- 1.05 acres
GENERAL PLAN (existing) Sa			_AN (proposed)N/A
ZONE (existing) M-1 (Light Ind	ustrial) ZON	NE (proposed) N/A	
GENERAL PLAN FINDINGS	CONSISTENT	☐ INCONSISTENT	MAY BE/FINDINGS
PLANNING COMMISSION DEC	CISION:	HEARING [	DATE:
	APPROVED	DENIED	OTHER
PLANNING DIRECTORS DECI-	SION:	HEARING [	DATE:
	APPROVED	DENIED	OTHER
ENVIROMENTAL EVALUATION	N COMMITTEE DE	CISION: HEARING	DATE: 12/15/2022
		INITIAL STU	JDY:#22-0035
☐ NEGA	TIVE DECLARATION	☐ MITIGATED NEG	. DECLARATION
DEPARTMENTAL REPORTS /	APPROVALS:		
PUBLIC WORKS AG APCD E.H.S. FIRE / OES SHERIFF. OTHER Qued	NONE     NONE     NONE     NONE     NONE     NONE     NONE     NONE  chan Indian Tribe. II	D. Coachella Valley	ATTACHED ATTACHED ATTACHED ATTACHED ATTACHED ATTACHED ATTACHED Water District, CUPA

**REQUESTED ACTION:** 

(See Attached)

## □ NEGATIVE DECLARATION□ MITIGATED NEGATIVE DECLARATION

Initial Study & Environmental Analysis For:

Conditional Use Permit #22-0021 Initial Study #22-0035 Jesus & Liliana Aguirre (Aguirre's Propane, LLC)



Prepared By:

#### **COUNTY OF IMPERIAL**

Planning & Development Services Department 801 Main Street

El Centro, CA 92243 (442) 265-1736 www.icpds.com

November 2022

#### **TABLE OF CONTENTS**

		PAGE
SE	ECTION 1	
il.	INTRODUCTION	3
<u>se</u>	ECTION 2	
II.	ENVIRONMENTAL CHECKLIST	8
	PROJECT SUMMARY	10
	ENVIRONMENTAL ANALYSIS	13
	I. AESTHETICS	14
	II. AGRICULTURE AND FOREST RESOURCES	
	III. AIR QUALITY	
	IV. BIOLOGICAL RESOURCES	
	V. CULTURAL RESOURCES	
	VI. ENERGY	
	VII. GEOLOGY AND SOILS	
	VIII. GREENHOUSE GAS EMISSION IX. HAZARDS AND HAZARDOUS MATERIALS	
	IX. HAZARDS AND HAZARDOUS MATERIALS X. HYDROLOGY AND WATER QUALITY	
	XI. LAND USE AND PLANNING	
	XII. MINERAL RESOURCES	
	XIII. NOISE	
	XIV. POPULATION AND HOUSING	
	XV. PUBLIC SERVICES	
	XVI. RECREATION	
	XVII. TRANSPORTATION	
	XVIII. TRIBAL CULTURAL RESOURCES XIX. UTILITIES AND SERVICE SYSTEMS	21
	XIX. UTILITIES AND SERVICE SYSTEMSXX. WILDFIRE	
	WILDI INC	20
<u>Se</u>	ECTION 3	
111	MANDATORY FINDINGS OF SIGNIFICANOS	00
III. IV.	MANDATORY FINDINGS OF SIGNIFICANCE PERSONS AND ORGANIZATIONS CONSULTED	23 24
۱۷. V.	REFERENCES	25
VI.	NEGATIVE DECLARATION - COUNTY OF IMPERIAL	26
27	FINDINGS	27
SE	ECTION 4	
VIII.	RESPONSE TO COMMENTS (IF ANY)	28
IX.	MITIGATION MONITORING & REPORTING PROGRAM (MMRP) (IF AN	

## SECTION 1 INTRODUCTION

#### A. PURPOSE

This document is a 🔲 policy-level, 🗵 project level Initial Study for evaluation of potential environmental ir	npacts
resulting with the proposed Conditional Use Permit (Refer to Exhibit "A" & "B").	

## B. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REQUIREMENTS AND THE IMPERIAL COUNTY'S GUIDELINES FOR IMPLEMENTING CEQA

As defined by Section 15063 of the State California Environmental Quality Act (CEQA) Guidelines and Section 7 of the County's "CEQA Regulations Guidelines for the Implementation of CEQA, as amended", an Initial Study is prepared primarily to provide the Lead Agency with information to use as the basis for determining whether an Environmental Impact Report (EIR), Negative Declaration, or Mitigated Negative Declaration would be appropriate for providing the necessary environmental documentation and clearance for any proposed project.

According to	Section	15065,	an <b>EIR</b> is	deemed	appropriate	for a	n particular	proposal	if the	following	conditions
occur:											

- The proposal has the potential to substantially degrade quality of the environment.
- The proposal has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The proposal has possible environmental effects that are individually limited but cumulatively considerable.
- The proposal could cause direct or indirect adverse effects on human beings.

significant effects to insignificant levels.

_	According to Section 15070(a), a <b>Negative Declaration</b> is deemed a in any significant effect on the environment.	appropriate i	f the proposal v	vould not result
_	According to Section 15070(b), a <b>Mitigated Negative Declaration</b> that though a proposal could result in a significant effect, mitigation			

This Initial Study has determined that the proposed applications will not result in any potentially significant environmental impacts and therefore, a Negative Declaration is deemed as the appropriate document to provide necessary environmental evaluations and clearance as identified hereinafter.

This Initial Study and Negative Declaration are prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code, Section 21000 et. seq.); Section 15070 of the State & County of Imperial's Guidelines for Implementation of the California Environmental Quality Act of 1970, as amended (California Code of Regulations, Title 14, Chapter 3, Section 15000, et. seq.); applicable requirements of the County of Imperial; and the regulations, requirements, and procedures of any other responsible public agency or an agency with jurisdiction by law.

Pursuant to the County of Imperial <u>Guidelines for Implementing CEQA</u>, depending on the project scope, the County of Imperial Board of Supervisors, Planning Commission and/or Planning Director is designated the Lead Agency, in accordance with Section 15050 of the CEQA Guidelines. The Lead Agency is the public agency which has the

principal responsibility for approving the necessary environmental clearances and analyses for any project in the County.

#### C. INTENDED USES OF INITIAL STUDY AND NEGATIVE DECLARATION

This Initial Study and Negative Declaration are informational documents, which are intended to inform County of Imperial decision makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed applications. The environmental review process has been established to enable public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any potentially adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency and other responsible public agencies must balance adverse environmental effects against other public objectives, including economic and social goals.

The Initial Study and Negative Declaration, prepared for the project will be circulated for a period of 20 days (30-days if submitted to the State Clearinghouse for a project of area-wide significance) for public and agency review and comments. At the conclusion, if comments are received, the County Planning & Development Services Department will prepare a document entitled "Responses to Comments" which will be forwarded to any commenting entity and be made part of the record within 10-days of any project consideration.

#### D. CONTENTS OF INITIAL STUDY & NEGATIVE DECLARATION

This Initial Study is organized to facilitate a basic understanding of the existing setting and environmental implications of the proposed applications.

#### **SECTION 1**

**I. INTRODUCTION** presents an introduction to the entire report. This section discusses the environmental process, scope of environmental review, and incorporation by reference documents.

#### **SECTION 2**

II. ENVIRONMENTAL CHECKLIST FORM contains the County's Environmental Checklist Form. The checklist form presents results of the environmental evaluation for the proposed applications and those issue areas that would have either a potentially significant impact, potentially significant unless mitigation incorporated, less than significant impact or no impact.

**PROJECT SUMMARY, LOCATION AND EVIRONMENTAL SETTINGS** describes the proposed project entitlements and required applications. A description of discretionary approvals and permits required for project implementation is also included. It also identifies the location of the project and a general description of the surrounding environmental settings.

**ENVIRONMENTAL ANALYSIS** evaluates each response provided in the environmental checklist form. Each response checked in the checklist form is discussed and supported with sufficient data and analysis as necessary. As appropriate, each response discussion describes and identifies specific impacts anticipated with project implementation.

#### **SECTION 3**

- **III. MANDATORY FINDINGS** presents Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.
- IV. PERSONS AND ORGANIZATIONS CONSULTED identifies those persons consulted and involved in

preparation of this Initial Study and Negative Declaration.

V. REFERENCES lists bibliographical materials used in preparation of this document.

VI. NEGATIVE DECLARATION - COUNTY OF IMPERIAL

VII. FINDINGS

#### **SECTION 4**

**VIII. RESPONSE TO COMMENTS (IF ANY)** 

IX. MITIGATION MONITORING & REPORTING PROGRAM (MMRP) (IF ANY)

#### E. SCOPE OF ENVIRONMENTAL ANALYSIS

For evaluation of environmental impacts, each question from the Environmental Checklist Form is summarized and responses are provided according to the analysis undertaken as part of the Initial Study. Impacts and effects will be evaluated and quantified, when appropriate. To each question, there are four possible responses, including:

- 1. **No Impact**: A "No Impact" response is adequately supported if the impact simply does not apply to the proposed applications.
- 2. **Less Than Significant Impact:** The proposed applications will have the potential to impact the environment. These impacts, however, will be less than significant; no additional analysis is required.
- 3. **Potentially Significant Unless Mitigation Incorporated:** This applies where incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact".
- 4. **Potentially Significant Impact:** The proposed applications could have impacts that are considered significant. Additional analyses and possibly an EIR could be required to identify mitigation measures that could reduce these impacts to less than significant levels.

#### F. POLICY-LEVEL or PROJECT LEVEL ENVIRONMENTAL ANALYSIS

This Initial Study and Negative Declaration will be conducted under a  $\square$  policy-level,  $\boxtimes$  project level analysis. Regarding mitigation measures, it is not the intent of this document to "overlap" or restate conditions of approval that are commonly established for future known projects or the proposed applications. Additionally, those other standard requirements and regulations that any development must comply with, that are outside the County's jurisdiction, are also not considered mitigation measures and therefore, will not be identified in this document.

#### G. TIERED DOCUMENTS AND INCORPORATION BY REFERENCE

Information, findings, and conclusions contained in this document are based on incorporation by reference of tiered documentation, which are discussed in the following section.

#### 1. Tiered Documents

As permitted in Section 15152(a) of the CEQA Guidelines, information and discussions from other documents can be included into this document. Tiering is defined as follows:

"Tiering refers to using the analysis of general matters contained in a broader EIR (such as the one prepared

for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project."

Tiering also allows this document to comply with Section 15152(b) of the CEQA Guidelines, which discourages redundant analyses, as follows:

"Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects including the general plans, zoning changes, and development projects. This approach can eliminate repetitive discussion of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review. Tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration."

Further, Section 15152(d) of the CEQA Guidelines states:

"Where an EIR has been prepared and certified for a program, plan, policy, or ordinance consistent with the requirements of this section, any lead agency for a later project pursuant to or consistent with the program, plan, policy, or ordinance should limit the EIR or negative declaration on the later project to effects which:

- (1) Were not examined as significant effects on the environment in the prior EIR; or
- (2) Are susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means."

#### 2. Incorporation By Reference

Incorporation by reference is a procedure for reducing the size of EIRs/MND and is most appropriate for including long, descriptive, or technical materials that provide general background information, but do not contribute directly to the specific analysis of the project itself. This procedure is particularly useful when an EIR or Negative Declaration relies on a broadly-drafted EIR for its evaluation of cumulative impacts of related projects (Las Virgenes Homeowners Federation v. County of Los Angeles [1986, 177 Ca.3d 300]). If an EIR or Negative Declaration relies on information from a supporting study that is available to the public, the EIR or Negative Declaration cannot be deemed unsupported by evidence or analysis (San Francisco Ecology Center v. City and County of San Francisco [1975, 48 Ca.3d 584, 595]). This document incorporates by reference appropriate information from the "Final Environmental Impact Report and Environmental Assessment for the "County of Imperial General Plan EIR" prepared by Brian F. Mooney Associates in 1993 and updates.

When an EIR or Negative Declaration incorporates a document by reference, the incorporation must comply with Section 15150 of the CEQA Guidelines as follows:

- The incorporated document must be available to the public or be a matter of public record (CEQA Guidelines Section 15150[a]). The General Plan EIR and updates are available, along with this document, at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.
- This document must be available for inspection by the public at an office of the lead agency (CEQA Guidelines Section 15150[b]). These documents are available at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.
- These documents must summarize the portion of the document being incorporated by reference or briefly

describe information that cannot be summarized. Furthermore, these documents must describe the relationship between the incorporated information and the analysis in the tiered documents (CEQA Guidelines Section 15150[c]). As discussed above, the tiered EIRs address the entire project site and provide background and inventory information and data which apply to the project site. Incorporated information and/or data will be cited in the appropriate sections.

- These documents must include the State identification number of the incorporated documents (CEQA Guidelines Section 15150[d]). The State Clearinghouse Number for the County of Imperial General Plan EIR is SCH #93011023.
- The material to be incorporated in this document will include general background information (CEQA Guidelines Section 15150[f]). This has been previously discussed in this document.

#### Environmental Checklist

- 1. Project Title: Conditional Use Permit #22-0021
- 2. Lead Agency: Imperial County Planning & Development Services Department
- 3. Contact person and phone number: Gerardo A. Quero, Planner I, (442)265-1736, ext. 1748
- 4. Address: 801 Main Street, El Centro CA, 92243
- 5. E-mail: gerardoquero@co.imperial.ca.us
- 6. Project location: 1338 Glendale Ave., Salton City, CA 92274, Assessor's Parcel Number (APN) 014-031-005
- 7. Project sponsor's name and address: Jesus & Liliana Aguirre (Aguirre's Propane, LLC)

P.O. Box 2822, Indio, CA 92202

- 8. General Plan designation: Urban Area per the West Shores/Salton City Urban Area
- 9. **Zoning**: M-1 (Light Industrial)

II.

10. **Description of project**: The applicants, Jesus & Liliana Aguirre (Aguirre's Propane, LLC), propose the construction and operation of a Liquefied Petroleum Gas (LPG) bulk plant to store and distribute Liquid Propane Gas for commercial business purposes. The subject property contains approximately 1.05 acres.

Aguirre's Propane, LLC is expecting to receive a bulk delivery of Liquefied Petroleum Gas every two weeks on an annual average. Liquefied Petroleum Gas will be stored on a thirty thousand (30,000) gallon Propane Gas tank on site guarded with guard posts around it. The LPG bulk plant property will be fenced all around with chain link fencing. Received bulk delivery of Liquefied Petroleum Gas (LPG) will used to refill company's bobtail trucks of 2300 to 2600 gallon capacity for dispensing fuel (LPG) to company customers' residences and business locations. The company will be using two bobtail trucks for business operations.

Aguirre's Propane, LLC will not be dispensing fuel (LPG) to the public at this location, therefore, there will be no public access at this location. The refilling operations of company's bobtail trucks will be twice a week on an average annual basis. The refilling procedures should take approximately two (2) hours from 7 am to 9 am on Monday, Wednesday, or Friday. There shall be two company personnel during the refilling of company's bobtail trucks.

Aguirre's Propane, LLC will be using Service Road and Glendale Avenue on their routes and travels to the LPG bulk plant. The applicant plans to continue providing service to their current service area throughout the Coachella Valley and grow their business operations in the Salton City and surrounding communities.

- 11. **Surrounding land uses and setting**: The project is located between Service Road and Pasadena Avenue, bounded to the south by Glendale Avenue in the unincorporated community of Salton City, County of Imperial, CA. The subject property is described as Lot 07, Block 07, Tract 570, FM 528, Township 10 South, Range 10 East of the San Bernardino Base and Meridian, containing approximately 1.05 acres. The property is also known as Assessor's Parcel Number (APN) 014-031-005. The project is surrounded by parcels zoned as M-1 (Light Industrial) on the North, South, East, and West.
- 12. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.): Planning Commission.
- 13. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentially, etc.?

The Quechan, Torres Martinez Desert Cahuilla, and Augustine Band of Cahuilla Mission Indian Tribes have requested to be consulted under Assembly Bill 52. Consultation letters were sent to the Quechan, Torres Martinez Desert Cahuilla, and Augustine Band of Cahuilla Indian Tribes. The County received on October 3, 2022, an email response from the Quechan Indian Tribe advising they had no comments for this project. No comments have been received from Torres Martinez Desert Cahuilla and Augustine Band of Cahuilla Mission Indian Tribes for this project to this date.

#### **ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project, involving at least one imp	pact
that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.	

	Aesthetics		Agriculture and Forestry	Resources		Air Quality	
	Biological Resources		Cultural Resources			Energy	
	Geology /Soils		Greenhouse Gas Emiss	ions		Hazards & Hazardous	Materials
	Hydrology / Water Quality		Land Use / Planning			Mineral Resources	
	Noise		Population / Housing			Public Services	
	Recreation		Transportation			Tribal Cultural Resource	es
	Utilities/Service Systems		Wildfire			Mandatory Findings of	Significance
For DECL For Signification  A MIT For IMPAC  mitiga	Review of the Initial Stude ound that the proposed ARATION will be prepare ound that although the poant effect in this case be IGATED NEGATIVE DECUMENT ound that the proposed CT REPORT is required ound that the proposed ted" impact on the environt to applicable leads	project ( ed. proposed ecause re CLARAT project M project proment, I	project could have evisions in the project COULD NOT have a signific MAY have a "pote but at least one effe	a significant of a significant of have been rod.  ant effect on of the number of the n	effect on t effect on t nade by or the environ ant impact n adequate	he environment, the agreed to by the pendent, and an EN order or "potentially sely analyzed in an	nere will not be a project proponent NVIRONMENTAL significant unless earlier documen
analys	ant to applicable legal s sis as described on attac ne effects that remain to	hed she	ets. An ÉNVIRONM	addressed b IENTAL IMPA	NCT REPC	on measures bas PRT is required, bu	ed on the earlier of it must analyze
signific applic DECL	ound that although the procant effects (a) have be able standards, and (l ARATION, including reverses	en analy b) have	zed adequately in been avoided or	an earlier Elf mitigated po	R or NEGA ursuant to	ATIVE DECLARAT that earlier EIF	FION pursuant to Ror NEGATIVE
CALIF	ORNIA DEPARTMENT	OF FISH	I AND WILDLIFE DE	E MINIMIS IM	IPACT FIN	IDING: Yes	☐ No
	EEC VOTES PUBLIC WORKS ENVIRONMENTAL OFFICE EMERGEN APCD AG SHERIFF DEPART ICPDS	ICY SER			ABSENT		
.lim M	innick. Director of Planni	ing/FFC	Chairman		<u> </u>		

#### **PROJECT SUMMARY**

- A. Project Location: The project is located at 1338 Glendale Avenue, Salton City, CA 92274; Assessor's Parcel Number: 014-031-005-000.
- **B.** Project Summary: The applicants, Jesus and Liliana Aguirre (Aguirre's Propane, LLC), propose the construction and operation of a Liquefied Petroleum Gas (LPG) bulk plant to store and distribute Liquid Propane Gas for commercial business purposes. The subject property contains approximately 1.05 acres.

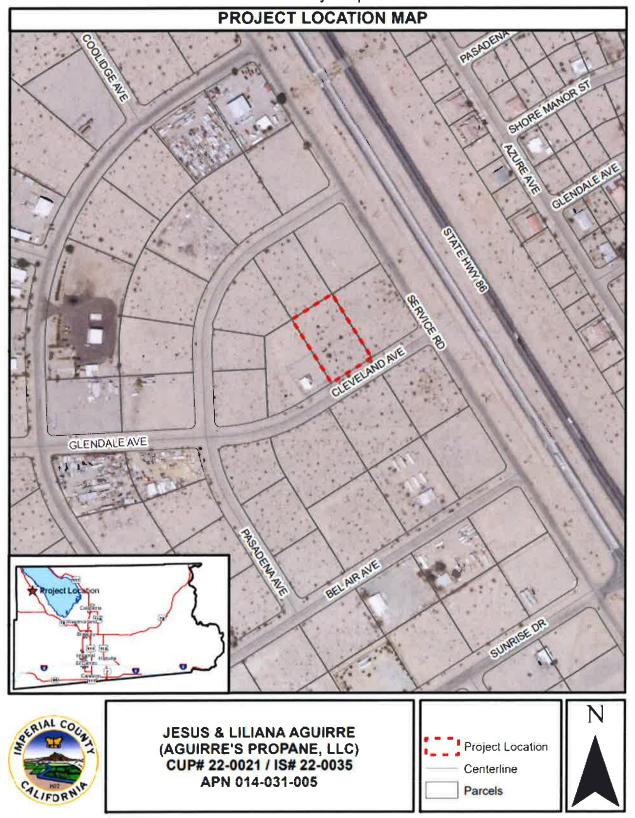
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Aguirre's Propane, LLC will not be dispensing fuel (LPG) to the public at this location, therefore, there will be no public access at this location. The refilling operations of company's bobtail trucks will be twice a week on an average annual basis. The refilling procedures should take approximately two (2) hours from 7 am to 9 am on Monday, Wednesday, or Friday. There shall be two company personnel during the refilling of company's bobtail trucks.

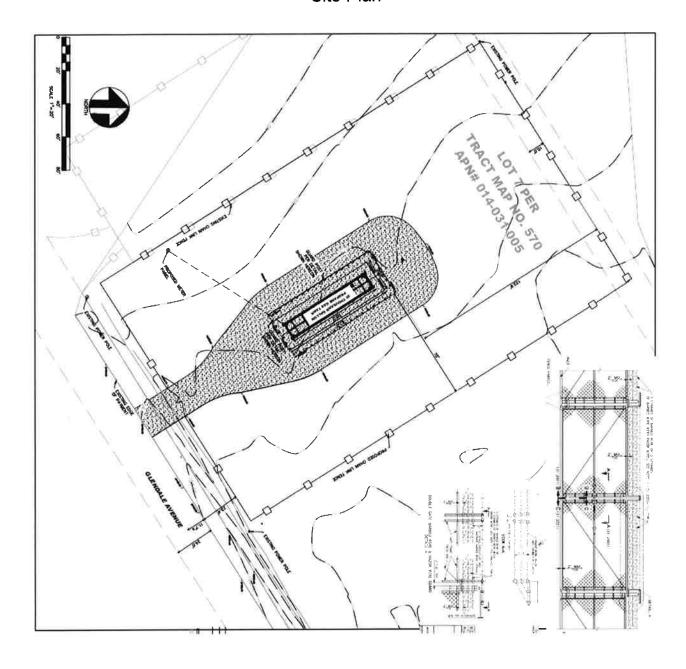
Aguirre's Propane, LLC will be using Service Road and Glendale Avenue on their routes and travels to the LPG bulk plant. The applicant plans to continue providing service to their current service area throughout the Coachella Valley and grow their business operations in the Salton City and surrounding communities.

- C. Environmental Setting: The proposed project is located within an area surrounded by already developed parcels with existing industrial uses. The proposed project site is relatively flat, located on Glendale Avenue, bounded by Pasadena Avenue and Service Road in the County of Imperial, CA. The City of Coachella is located approximately 30 miles northwest of the project site.
- D. Analysis: According to the West Shores/Salton City Urban Area, the land use designation of the project site "Urban", and it is classified as M-1 (Light Industrial) per Zone Map #64 of the Imperial County Land Use Ordinance (Title 9). Initial Study #22-0035 will analyze any impacts related with the proposed project.
- E. General Plan Consistency: The project is located within the County's General Plan designation of "Urban", according to the West Shores/Salton City Urban Area and is zoned M-1 (Light Industrial). The proposed project is consistent with the General Plan and County Land Use Ordinance (Title 9) Division 5, Section §90515.02 (k) since a Conditional Use Permit has been applied for the bulk fuel storage facility pursuant to Division 2, Section §90203.01 of the aforementioned title.

# Exhibit "A" Vicinity Map



### Exhibit "B" Site Plan



#### **FVALUATION OF ENVIRONMENTAL IMPACTS:**

- A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a) Earlier Analysis Used, Identify and state where they are available for review.
  - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
  - a) the significance criteria or threshold, if any, used to evaluate each question; and
  - b) the mitigation measure identified, if any, to reduce the impact to less than significance

		Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
	STHETICS  t on provided in Bublic Bosouroon Code Section 21000, would the n	roject:			
Excep	t as provided in Public Resources Code Section 21099, would the p	rojeci.			
a)	Have a substantial adverse effect on a scenic vista or scenic highway?				$\boxtimes$
	a) Four areas within the County have the potential as state located near any scenic vista or scenic highway according Highway Element <sup>1</sup> and California State Scenic Highway Systems	g to the Imperia	al County General Pla		
b)	Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				
	b) As previously stated on section (I)(a), the proposed project not substantially damage any scenic resources. No impacts a		near a scenic vista or s	cenic highway	and would
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surrounding? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable				
	zoning and other regulations governing scenic quality?  c) A Liquefied Petroleum Gas (LPG) bulk plant for storage an the project's planned construction and operation. Given that would not materially or physically impair the present aest surroundings. It would also not violate any applicable zor anticipated to be less than significant.	the proposed s hetic character	ite's zone is intended or quality of public	for industrial p views of the s	urposes, it ite and its
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?  d) The proposed project entails the development and mai commercial distribution and storage. It is not anticipated th impact daytime or nighttime views in the region as all onsproperties and the road. Any impacts are anticipated to be less	at a new sourc site lighting wil	e of significant light of the second	or glare would	negatively
II.	AGRICULTURE AND FOREST RESOURCES				
Agricu use in enviro the sta	ermining whether impacts to agricultural resources are significan ltural Land Evaluation and Site Assessment Model (1997) prepared assessing impacts on agriculture and farmland. In determining whe mental effects, lead agencies may refer to information compiled by te's inventory of forest land, including the Forest and Range Asses a measurement methodology provided in Forest Protocols adopted by	by the California ether impacts to f y the California E sment Project ar	Department of Conserv forest resources, including Department of Forestry and the Forest Legacy As	ation as an option of timberland, a and Fire Protect sessment proje	onal model to are significant ion regarding ct; and forest
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?  a) The proposed project site is listed as "Area Not Mapped" to Mapping & Monitoring Program: Imperial County Important	Farmland 2018	Map3. Therefore, the p	proposed proje	ect will not
	convert any type of Prime Farmland, Unique Farmland, or Fimpacts are expected.	armland of Sta	tewide Importance to	non-agricultur	al use. No
b)	Conflict with existing zoning for agricultural use, or a Williamson Act Contract?  b) The County of Imperial has no current active Williamson W	ct contracts; the	erefore, the proposed i	oroject is not e	⊠ xpected to
	conflict with existing zoning for agricultural use, or a Williams				
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)),				$\boxtimes$

Impact Incorporated Impact No Impact (PSUMI) (PSI) (LTSI) (NI) timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(q))? c) Per Imperial County General Plan Land Use Map4, the proposed project site is designated as "Urban Area" with no forest land on its vicinity and surroundings; therefore, it is not expected to conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 5114(g)). No impacts are expected. Result in the loss of forest land or conversion of forest land to X non-forest use? d) As previously stated under item (II)(c) above, the proposed project is not located in a forest land, therefore, it is not expected to result in the loss of forest land or conversion of forest land to non-forest. No impacts are expected. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of  $\dot{\mathbb{X}}$ П Farmland, to non-agricultural use or conversion of forest land to non-forest use? e) As previously stated under item (II)(c), the proposed project site is located within an "Urban Area" according to the West Shores/Salton City Urban Area and Imperial County General Plan Land Use Map4, and is zoned M-1 (Light Industrial). Additionally, there are no existing farmland or forestland on or in the immediate vicinity. Development of the proposed project would not result in the loss or conversion of farmland to non-agricultural use or conversion of forestland to non-forest use. Therefore, no impacts are expected. The Office of Agricultural Commission provided a letter with information regarding Pointof-Sale Scanners and Electronic Pricing Devices as required for businesses to register with the Imperial County Sealer of Weights and Measures Department. It is the responsibility of the applicant to reach out to their office for compliance with all forms. III. AIR QUALITY Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to the following determinations. Would the Project: Conflict with or obstruct implementation of the applicable air quality plan? a) The proposed project is for the construction and operation of a Liquefied Petroleum Gas (LPG) bulk plant for commercial business purposes, and it is not expected to conflict with or obstruct implementation of the applicable air quality plan. Additionally, per Imperial County Air Pollution Control District's comment letter<sup>5</sup> dated October 14, 2022, the project would not require an Air District permit at this time. However, the Air District requests to be informed of any changes or modifications to the project equipment or processes to verify any additional requirements that may be triggered by the change. The project must comply with Regulation VIII, which is a collection of rules, designed to limit emissions of fugitive dust to 20% opacity. Adherence and compliance to ACPD's rules and regulations will bring any impacts to less than significant. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment  $\boxtimes$ under an applicable federal or state ambient air quality standard? b) As previously stated under item (III)(a) above, any future construction shall comply with the ICAPCD's Regulation VIII and other regulations, therefore, it is not expected that the proposed project would substantially contribute to an existing or projected air quality violation. Therefore, any impacts are expected to be less than significant. Expose sensitive receptors to substantial pollutants  $\boxtimes$ concentrations? c) The proposed project is expected to expose sensitive receptors to substantial pollutants concentrations during the construction of the LPG bulk plant. However, any exposure would be temporary and would be lessened by adhering to Air Pollution Control District's rules and regulations. Compliance with APCD's requirements would bring any impacts to less than significant. Result in other emissions (such as those leading to odors

Potentially Significant

Unless Mitigation

Potentially Significant Less Than

Significant

adversely affecting a substantial number of people?

Potentially Significant Impact (PSI) Potentially Significant Unless Mitigation Incorporated (PSUMI)

Less Than Significant Impact (LTSI)

No Impact (NI)

d) The proposed project does not anticipate to create objectionable odors that would adversely affect a substantial number of people. Although some pollutants may be emitted during construction activities and as previously stated on item (III)(a) above, compliance with ACPD's rules and regulations and adherence to the California Building Code would bring any impacts to less than significant.

IV.	BIO	LOGICAL RESOURCES Would the project:				
	a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?  a) The proposed project location is within an industrial zor industrial operations. According to the Imperial County Ger "Sensitive Habitat Map <sup>6a</sup> ," the project is not located within a sthat the project is located within the Burrowing Owl Species I are expected as a result of project approval and construction structures. The proposed tank height will not exceed the zor significant impacts are expected.	neral Plan's Cor ensitive habitat Distribution Mod on since the pro	nservation and Open area. Figure 2 "Sensit lel area; however, no s oject design will cons	Space Elemer ive Species Ma ubstantial adv ist of tanks a	nt <sup>6</sup> , Figure 1 ap <sup>6b</sup> " shows erse effects and no other
	b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?  b) According to the Imperial County General Plan's Conserventive or riparian habitat, or on other sensitive natural ceffect in local regional plans, policies, and regulations with Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	ommunity; then respect to sen	efore, it does not app sitive natural commu	ear to have a nities or by th	substantial e California
	c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?  c) According to the National Wetlands Inventory: Surface W within a riparian habitat and which will not cause a substant not limited to, marsh, vernal pool, coastal, etc.) through direct impacts are expected to be less than significant.	ial adverse effe	ct on federal protected	i wetlands (inc	cluding, but
	d)	Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?  d) The proposed project site is located on a vacant parcel zon acres and is surrounded by other parcels with same zoning wabove, the project site is not located within a Sensitive Habit the movement of any resident or migratory fish or wildlife specified in the corridors, or impede the use of native wildlife nursery sites.	rith existing indu tat and is theref pecies or with e	ustrial uses. As previo fore not expected to ir established native resi	usly stated on iterfere substa dent or migrat	item (IV)(b) intially with cory wildlife
	e)	Conflict with any local policies or ordinance protecting biological resource, such as a tree preservation policy or ordinance?  e) The proposed project does not conflict with any local pol preservation policies or ordinances. No impacts are expected.		protecting biologica	☐ I resources, s	⊠ uch as tree
	f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?  f) The proposed project site is not located within a designated	Sensitive area a	according to the Imper	⊠ rial County Ger	neral Plan's

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Conservation and Open Space Element<sup>6</sup>, therefore, it would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Any impacts are expected to be less than significant.

V.	CU	LTURAL RESOURCES	Would the project:				
	a)	historical resource pursua a) According to the Implocated within an "Area of Native American Cult In addition, on October 3 no comments on this	orse change in the significance of a nt to §15064.5?  erial County General Plan's Conserva of Heightened Historic Period Sensitivaral Sensitivity <sup>6d</sup> ," does not locate the B, 2022, the County received an email project <sup>8</sup> . The surrounding area is a historical resources. Any impacts are	vity <sup>6c</sup> ." Additiona e proposed proje from the Quecha dready disturbed	ally, in accordance we ect within a designat In Historic Preservat Id with existing indu	ith Figure 6, "Kn ed area of possil ion Officer statin ustrial operation	own Areas ble impact. ig they had
	b)	archaeological resource p b) The proposed project resources have been fo	rse change in the significance of an ursuant to §15064.5? ct is located on an already disturbed und. The proposed Liquefied Petrole gical resource. Any impacts are expense.	um Gas bulk pla	int is not likely to ca		
	c)	of dedicated cemeteries? c) As previously stated cemeteries, therefore, t	ns, including those interred outside on items (V)(a) and (V)(b) above, the he proposed project would not dist ny impacts are expected to be less th	urb any human			
VI.	ENI	ERGY Would the projec	t:				
	a)	wasteful, inefficient, or ur resources, during project of a) The proposed Liquef zone, which is currently insufficient, or unnece developments would re- application with the Im- received from the Imper	ficant environmental impact due to innecessary consumption of energy construction or operation? led Petroleum Gas storage and distribution industrial; therefore, it will not result ssary consumption of energy resquire compliance with the latest edit perial County Planning and Developial Irrigation District <sup>9</sup> dated October cant should be advised to contact the	in potentially sig ources, during ion of the Califor oment Services I 4, 2022, for any t	inificant environmen the project construing rnia Building Code Department. Addition temporary and/or pe	ntal impact due to uction or opera and a new build onally, per comr ermanent electric	o wasteful, ation. Any ling permit ment letter cal service
	b)	energy or energy efficience b) The proposed project	is not expected to conflict with or obs s for renewable energy that could be				
VII.	GE	OLOGY AND SOILS W	ould the project:				
	a)	effects, including risk of lo a) The proposed project industrial uses are prop latest edition of the Cali proposed project would and soils. Any expected  1) Rupture of a known	use potential substantial adverse ss, injury, or death involving: does not appear to conflict with the osed as permitted on current zoning fornia Building Code as well as to g not directly or indirectly cause pote are expected to be less than significate earthquake fault, as delineated on	ı. Any developm ıo through a min ntial substantial	ents will be subject nisterial building per	ed to compliand rmit review. The	e with the refore, the
		the most recent Alqu	uist-Priolo Earthquake Fault Zoning	-		_	

Potentially Significant Impact (PSI) Potentially Significant Unless Mitigation Incorporated (PSUMI)

Less Than Significant Impact (LTSI)

No Impact (NI)

Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

	1) According to the most recent Alquist-Priolo Earthqual Fail Activity Map <sup>11</sup> , and the United States Geological Sur located within a Fault Zone. However, Imperial County is which required that any developments within this zon resistant measures. Any developments will be subject to Code as well as to go through an administrative building and regulations would bring any impacts to less than significant regulations.	vey's Quaterna s classified as e be required o compliance permit review	ary Faults Map <sup>12</sup> , the p Seismic Zone D per th to incorporate the m with the latest edition	roposed project ne Uniform Bui nost stringent of the Californ	ct site is not Iding Code, earthquake nia Building
2)	Strong Seismic ground shaking?	П		$\boxtimes$	П
,	2) As previously stated on item (VII)(a)(1) above, the primperial County is classified as Seismic Zone D per the within this zone be required to incorporate the most striedition of the California Building Code and as well as to gimpacts to less than significant.	Uniform Buildi ngent earthqu	ng Code, which requir ake resistant measure	red that any de es. Adherence t	velopments to the latest
3)	Seismic-related ground failure, including liquefaction		П	$\bowtie$	
	and seiche/tsunami?  3) The proposed project site is not located in a seiche/tsu are expected to be less than significant.	nami area per	the California Tsunami	_	Any impacts
4)	Landslides?			$\boxtimes$	
	4) According to Imperial County General Plan's Seismic a 2, the proposed project is not located within a landslide is generally flat; therefore, any impacts are expected to be	activity area.	The topography within	de Activity Map the proposed	o <sup>14a</sup> ," Figure project site
b) A	alt in substantial soil erosion or the loss of topsoil?  ccording to Imperial County General Plan's Seismic and Poroposed project is not located within an area of substant ificant.	Ublic Safety E ial soil erosion	lement <sup>14</sup> , "Erosion Act a. Any impacts are exp	⊠ tivity Map <sup>14b</sup> ," l ected to be les	Figure 3, as than
woul poter subs c) TI prop Code	pocated on a geologic unit or soil that is unstable or that do become unstable as a result of the project, and nitially result in on- or off-site landslides, lateral spreading, idence, liquefaction or collapse? The proposed project site is not located on a geological unosed LPG bulk plant. Any construction will be subjected as well as to go through a ministerial building permital lations would bring any impacts to less than significant.	to compliance	with the latest edition	of the Californ	nia Building
Build or pr d) TI deve	ocated on expansive soil, as defined in the latest Uniform ling Code, creating substantial direct or indirect risk to life operty?  ne proposed project is not located on an expansive soil all lopments will require adherence and compliance to the Cothrough a ministerial building permit review which would	alifornia Build	ling Code, standards a	and regulations	c), any new s, as well as
Have septi wher wate e) T distr	e soils incapable of adequately supporting the use of c tanks or alternative waste water disposal systems e sewers are not available for the disposal of waste	ation of a Liq	uefied Petroleum Gas mental Health <sup>15</sup> dated	⊠ s facility for s October 19, 20	22, advises
of To	oxic Substances Control/Certified Unified Program Agencie	es to ensure th	ey meet their standard	s. Any future c	onstruction

proposing any septic or alternative waste water disposal systems shall comply with applicable standards and regulations from the imperial County Public Health Department, Division of Environmental Health. Adherence and compliance to these

standards would bring any impacts to less than significant.

b)

c)

d)

e)

			Potentially Significant Impact (PSI)	Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
-	f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			×	
		f) The proposed project site is located on an area surrounder proposed Liquefied Petroleum Gas bulk plant does not appresource or site of unique geologic feature on site as there of. Additionally, in the event of any paleontological findings Valley College Desert Museum shall be contacted to have a qube less than significant.	pear to directly are no known ur on site during co	or indirectly destroy nique resources or feat onstruction, all work s	a unique paled atures on site n shall stop and th	ontological nor records he Imperial
VIII.	GR	EENHOUSE GAS EMISSION Would the project:				
	a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			$\boxtimes$	
		a) The proposed LPG bulk plant is located on an area surrou The action is not expected to generate greenhouse gas emi impact on the environment. Additionally, as previously state rules and regulations will bring any impacts to less than sign	ssions, either di ed on item (III)(a	rectly or indirectly, th	at may have a	significant
	b)	Conflict with an applicable plan or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			$\boxtimes$	
		b) The proposed project would not conflict with any regular reducing the emissions of greenhouse gases to 1990 lev regulations. Less than significant impacts are expected.				
IX.	HA	ZARDS AND HAZARDOUS MATERIALS Would the project	t:			
	a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			$\boxtimes$	
		a) The proposed project is for the construction and opera distribution of LP Gas and is not expected to create a signific transport, use, or disposal of hazardous materials. Per commontrol (DTSC)-Imperial Certified Unified Program Agencies (regulatory design and system operational requirements, and Health upon start of operations. They will be in the Hazar Environmental Reporting System (CERS) account prior to adherence to the Department of Toxic Substances Control is and regulations will bring any impacts to less than significant	ant hazard to the ment email recei (CUPA) <sup>16</sup> dated C d must notify Di dous Materials operation. Addi mperial CUPA a	e public or the enviror ived from the Departr October 19, 2022, the fa ISC Imperial CUPA at Program and will ne tionally, per Imperial	nment through the nent of Toxic Second County Envired to create a County Comp	the routine Substances oform to all ironmental California liance and
	b)	Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
		b) The proposed project does not anticipate to create a signification for eseeable upset and accidental conditions involving the relast previously stated on item (IX)(a) above, compliance and Imperial CUPA and Imperial County Environmental Health rule	ease of hazardo d adherence to	us materials into the e the Department of T	environment. Ac oxic Substance	dditionally, es Control
	c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			$\boxtimes$	
		c) The proposed project does not anticipate the emitting of hazardous materials, substance, or waste. Additionally, the nearest school in the area is Desert Shores High School, whi site; therefore, it would not represent a risk to educational fac compliance and adherence to the Department of Toxic Substa Health rules and regulations will bring any impacts to less th	project site is n ch is approximat cilities. Furthern nces Control Imp	ot located within a ¼ tely 1.3 miles northeas nore, as previously sta	mile of any so st of the propos ated on item (IX	hools. The sed project ()(a) above,

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		Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
d)	Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?  d) The proposed project is not located on a site included Department of Toxic Substances Control EnviroStor <sup>17</sup> ; there			s according to	⊠ o California
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?  e) The proposed project is not located within an airport lare.		macrial County Airpo		⊠ omnotibility
	Maps <sup>18</sup> . The nearest airport in the area is the Salton Sea Airp therefore, it would not result or create a significant hazard area. No impacts are expected.	ort located appro	oximately 3.8 miles so	utheast of the p	project site;
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			$\boxtimes$	
	f) The proposed LPG bulk plant would not interfere with an applan. Additionally, on November 3, 2022, ICPDS received a cadvising the applicant shall provide an Emergency Responsional and/or spill, earthquake, other emergencies. According to leavailable to respond to emergencies at the facility to coording the site if needed. The emergency contact coordinator shall response plan and federal, state, and local regulations on he requirements will bring any impacts to less than significant.	comment letter from the property of the proper	om the Imperial Count ing possible emergen be at least one employ ncy responders and p miliar with the facility,	y Fire Departm cies (Examples ree "on-call" at rovide informa the emergenc	ent <sup>19</sup> s: fire, leak all times ation about y
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?  g) According to Cal Fire "Fire Hazard Severity Zones in Stat 7, 2007, the proposed project site is located within an uninco received from the Imperial County Fire Department <sup>19</sup> dated feet of the facility. Currently the closest fire hydrant is 800 for tank cooling within 10 minutes of a fire emergency as no number of fire extinguishers onsite should be provided. Fur the latest edition of the California Building Code as well as to compliance with ICFD's standards and with the California Building Rode as well as to compliance with ICFD's standards and with the California Building Code as well as to compliance with ICFD's standards and with the California Building Rode as well as to compliance with ICFD's standards and with the California Building Rode as well as to compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the compliance with ICFD's standards and with the California Building Rode as well as the complex rode with ICFD's standards and with the California Building Rode as well as the complex rode with ICFD's standards and with the California Building Rode as well as the complex rode with ICFD's standards and with the California Building Rode as well as the complex rode with ICFD's standards and with the California Building Rode as well as the complex rode	rporated Local R November 3, 202 eet away. This re oted in the facility thermore, the de o go through a mi	esponsibility Area. Ac 2, an approved fire hy quirement will help wi y fire safety analysis. A velopment will be sub inisterial building pern	cording to com drant installed th a reliable wa Additionally, a jected to comp nit review. Adh	ment letter within 300 ater source n adequate liance with erence and
X. <i>H</i>	YDROLOGY AND WATER QUALITY Would the project:				
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?  a) The proposed project is for the construction and operation any water quality standards or waste discharge requirement quality. Additionally, on October 10, 2022 ICPDS received a context flood protection measures shall comply with California the incremental increase of runoff from the 100-year storm applicant will be subject to the satisfaction of terms and conincluding, but not limited to fees and charges, water conserved a comment email from the Imperial County Division this project. Any impacts are expected to be less than significant with the subject to the satisfaction of terms and conincluding, but not limited to fees and charges, water conserved to be less than significant with the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and conincluding the subject to the satisfaction of terms and the subject to the satisfactio	nts or otherwise comment letter fr Drainage Law ar m. In addition, the orditions establist rvation measures on of Environme	substantially degrade om the Coachella Valle nd shall require 100 pe ney stated that for do shed by CVWD and im s, etc. Furthermore, on	surface or groey Water Distri- ercent on-site romestic water s posed from tir October 19, 2 ey had no con	ound water ct <sup>21</sup> stating etention of service the me to time, 022 ICPDS
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				

		Potentially Significant	Potentially Significant Unless Mitigation	Less Than Significant	
		Impact (PSI)	Incorporated (PSUMI)	Impact (LTSI)	No Impact (NI)
	<ul> <li>b) The proposed LPG bulk plant will continue with the existir decrease groundwater supplies or interfere substantially v sustainable groundwater management of the basin. Any imp</li> </ul>	with groundwate	er recharge such that	the project m	
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:			×	
	c) The proposed project does not anticipate a physical alteration pattern of the site or area, including through the alteration impervious surfaces. Any proposed grading will require drain Department. Any impacts are expected to be less than significant to be seen than significant to be seen that the context of the seen that the	of the course age review and	or a stream or river	or though the a	addition of
	(i) result in substantial erosion or siltation on- or off-site;			$\boxtimes$	
	(i) According to Imperial County General Plan's Seismic and the proposed site is not located within an area of substantial are expected to be less than significant.				
	<ul><li>(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;</li></ul>				
	(ii) The proposed LPG bulk plant project is not expected to smanner which would result in flooding on-or offsite. Any prothe Imperial County Department of Public Works. Compliant regulations would bring any impacts to less than significant.	posed grading to complete the complete	will require drainage re	eviews and app	proval with
	<ul> <li>(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or;</li> </ul>				
	(iii) The proposed project does not anticipate creating or c existing or planned stormwater drainage systems or provide stated on items (X)(c) and (X)(c)(ii) above, Any proposed grad County Public Works Department. Compliance with Imperial any runoff water impacts would be reduced to less than signi	substantial addi ling will require County Public V	itional sources of pollu drainage review and a	ited runoff. As p pproval from th	previously ne Imperial
	(iv) impede or redirect flood flows?			$\boxtimes$	
	(iv) According to the Federal Emergency Management Agen Map, the proposed project site is located within "Zone X" of parcel's Industrial use is proposed to remain and as a resu reviewed and approved grading/drainage letter is to be require compliance with ICPWD's standards would bring any impacts	of flood map 06 ilt, it would not ed by the Imperi	025C0336C, effective in impede or redirect flow ial County Public Work	September 26, ood flows. Addi	2008. The itionally, a
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? d) The proposed project will continue with the existing indust	rial use in the a	rea; therefore, impacts	⊠ related to risk	 release of
	pollutants due to project inundation are considered to be low proposed project site is located within "Zone X" of flood m contribute to lower any impacts to less than significant.				
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			$\boxtimes$	
	e) As previously stated on item (X)(c) above, any proposed gra County Department of Public Works; therefore, it is not expe obstruct the implementation of a water quality control plan of compliance with ICDPW's regulations would bring any impact	ected that the por or sustainable g	roposed LPG bulk pla roundwater managem	nt would confli	ict with or

			Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impac (NI)
Xì.	LA	ND USE AND PLANNING Would the project:				
	a)	Physically divide an established community?  a) The proposed project is for the construction of a Liquefied would not physically divide an established community. Addit Industrial (M-1) per Imperial County Land Use Ordinance, Titlexisting land use designation and zoning established; therefore	ionally, the zonir e 9, Division 5, C	ng designation for the hapter 12 and does no	mentioned par ot anticipate ch	cel is Light
	b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?  b) The proposed project is consistent with the Imperial Count storage facilities are allowed in an M-1 (Light Industrial) zone of 15, Section 90515.02(k). Any impacts are expected to be less	with an approved	l Conditional Use Perr	⊠ Use Ordinanc nit per Division	e; bulk fuel 5, Chapter
XII.	MIN	NERAL RESOURCES Would the project:				
	a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?  a) The proposed project does not anticipate the removal of n an active mine per Imperial County General Plan's Conserv Map <sup>6e</sup> " Figure 8. No impacts are expected.				
	b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?  b) The proposed LPG bulk plant will not result in the loss of a delineated on a local general plan, specific plan or other land	availability of loc use plan. No im	ally-important minera	ll resources red	⊠ covery site
XIII.	NO	ISE Would the project result in:				
	a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?  a) The proposed project is for a LPG bulk plant that would beyond that which already occurs on the surrounding area. County General Plan's Noise Element, <sup>23</sup> which states that con	However, any	construction would b	e subject to th	e Imperial
		7 a.m. to 7 p.m., Monday through Friday, and from 9 a.m. to 5 p piece of equipment or combination, shall not exceed 75 dB with Imperial County General Plan's Noise Element would bri	o.m. on Saturday Leq when averag	. Additionally, constru ged over an eight (8)	iction noise fro hour period. C	m a single
	b)	Generation of excessive groundborne vibration or groundborne noise levels?  b) Excessive groundborne vibration and noise levels are an Additionally, as previously stated on item (XIII)(a) above, any continuous Roise Element. Any impacts are expected to be less than sign	onstruction wou			
	c)	For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	of a private airet	rin: therefore no impo	act are expecte	⊠

_			Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
XIV.	PO	PULATION AND HOUSING Would the project:				
	a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?			×	
		<ul> <li>a) The proposed LPG bulk plant construction would not indedirectly or indirectly, as no changes to the designated industrated to be less than significant.</li> </ul>				
	b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?			$\boxtimes$	
		<ul> <li>b) The proposed project will not displace substantial num housing elsewhere as the industrial use designated on the p than significant.</li> </ul>				
XV.	Pl	UBLIC SERVICES				
	a)	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
		a) The proposed LPG bulk plant construction and operation adverse physical impacts associated with the provision of physically altered government facilities, the construction of maintain acceptable service ratios. Any impacts would be le	new or physically which could caus	altered government e significant environr	facilities, need	for new or
		1) Fire Protection?			$\boxtimes$	
		The proposed project is not expected to result in letter received from the Imperial County Fire Depa     An approved fire hydrant installed within 300	rtment <sup>19</sup> on Nove	mber 3, 2022:		
		away. This requirement will help with a relia emergency noted in the facility fire safety analy	ble water source			
		Leak mitigation and Hazmat equipment shall be Fire Department official(s). Equipment needs official(s);	kept on site in ap			
		<ul> <li>Fire department access roads shall be a width fire apparatus. Fire department access roads w County Fire Department. Gates will be in accemaintain a Knox Box/lock for access on site;</li> </ul>	ill be provided w	ith approved turn aro	und approved b	by Imperial
		<ul> <li>Provide an adequate number of fire extinguish official(s);</li> </ul>			•	
		All storage and handling of flammable and com and all federal, state, and local regulations, cod	les, and ordinanc		h the California	Fire Code
		<ul> <li>Compliance with all required sections of the fir An Emergency Response Plan shall be provided to Imperial (Examples: fire, leak and/or spill, earthquake, other emergen available to respond to emergencies at the facility to coordinate the site if needed. The emergency contact coordinator shall</li> </ul>	County Fire Depa cies). There shall nate with emerge	be at least one emplo ncy responders and p	oyee "on-call" a provide informa	at all times ition about
		plan and federal, state, and local regulations on hazard mate The project shall be in compliance at all times with requirequirements. Imperial County Fire Department shall conduct	rial storage and r rements in the C	elease. alifornia Fire Code a	nd local ordina	-

Imperial County Fire Department reserves the right to comment and request additional requirements pertaining to this project regarding fire and life safety measures, California Building and Fire Code, and National Fire Protection Association standards

at a later time as we see necessary.

		Potentially Significant	Significant Unless Mitigation	Less Than Significant	
		Impact	Incorporated	Impact	No Impact
		(PSI)	(PŚUMI)	(LTSI)	(NÍ)
	2) Police Protection?			$\boxtimes$	
	<ol> <li>The proposed project is not expected to result in subst. Patrol and Sheriff's Office Salton City Patrol have active p expected to be less than significant.</li> </ol>			the California	
	3) Schools?		П	$\boxtimes$	П
	3) The proposed LPG bulk plant is not expected to have less than significant.	a substantial impa	ct on schools. Any in		ected to be
	4) Parks?				$\boxtimes$
	4) The proposed project is not expected to create a substa	antial impact on par	ks. No impacts are ex	rpected.	
	5) Other Public Facilities?			$\boxtimes$	П
	5) The proposed project is not expected to have a substance less than significant.	ntial impact on othe	er public facilities. An	y impacts are e	expected to
√I. <i>Ri</i>	ECREATION				
a)	Would the project increase the use of the existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				$\boxtimes$
	<ul> <li>a) The proposed project is for the construction of a Subsequently, the proposed LPG bulk plant would not increcreational facilities such that substantial physical deterare expected.</li> </ul>	rease the use of exis	sting neighborhood a	nd regional par	ks or other
b)	Does the project include recreational facilities or require the			_	
	construction or expansion of recreational facilities which might have an adverse effect on the environment?  b) The proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include nor require the control of the proposed project does not include no project does not include no project does not include not the project does not include no project do	construction or exp	ansion of recreationa	I facilities as it	⊠
	projected to serve as a storage and distribution facility of				
TR	ANSPORTATION Would the project:				
a)	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			$\boxtimes$	
	a) The proposed project consists on the construction and distribution with LP Gas bulk delivery to the site once even the refilling procedures should take approximately two (2 proposed project is not expected to create a substantial in General Plan's Circulation and Scenic Highway Element <sup>1</sup> .	ery two weeks and ) hours from 7 am t impact to surround	there will be no publi o 9 am on Monday, W ing roads nor conflic	ic access at thi Vednesday, or F ting with Imper	s location. Friday. The Fial County
b)	Would the project conflict or be inconsistent with the CEQA Guidelines section 15064.3, subdivision (b)?			$\boxtimes$	
	b) The proposed project will not conflict or be inconsistent not expected to have a significant transportation impact wi land use. Additionally, although the proposed project site State Route 86, it does not appear to conflict or affect a impacts are expected.	ithin transit priority is located within ½	areas with no propos ½ mile of the intersec	ed change on the tion of Sunrise	he existing Drive and
c)	Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
	<ul> <li>c) The existing industrial use on the proposed project sit Designation and the site design is not expected to increa</li> </ul>				

Potentially

				Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact
		sign	ificant.				
	d)	d) Th zonii resp 2022 depa will l	alt in inadequate emergency access? The proposed project would not result in inadequate emergency are proposed. Access to the proposed project site onse vehicles. Additionally, per comment letter received, access roads shall be of a width of at least 20 feet another than the provided with approved tube in accordance with the current adapted fire code an erence and compliance with ICFD's requirements will british.	from Glendale I from the Imperi d all weather sui rn around appro d the facility wil	Avenue appears to b al County Fire Depart face capable of supp ved by Imperial Count I maintain a Knox Bo	e suitable for ment <sup>19</sup> dated N orting fire appa ty Fire Departn x/lock for acce	emergency ovember 3, aratus. Fire nent. Gates
XVIII.	T	RIBAL	CULTURAL RESOURCES				
	a)	signit Resc cultu the s	Id the project cause a substantial adverse change in the ficance of a tribal cultural resource, defined in Public burces Code Section 21074 as either a site, feature, place, ral landscape that is geographically defined in terms of ize and scope of the landscape, sacred place or object cultural value to a California Native American tribe, and s:				
		, r 2 ( I a s	According to the Imperial County General Plan's Consent located within any known Native American cultural suppropriate tribes with potential interest in the area. On Quechan Indian Tribe advising they had no comments Mission Indians, the Augustine Band of Cahuilla Mission Ilso consulted under Assembly Bill 52 via mail and ematurrounding area to the proposed project site is already known historical resources. Any impacts are expected to	ensitivity area. A October 3, 2022, for this project <sup>8</sup> Indians, and tha I for this projec disturbed with e	Additionally, the Coun the County received a . On September 30, 2 e Torres-Martinez Des at with no comments of existing industrial uses	ty has consult a response ema 2022, the Camp eert Cahuilla In- received to this with no docur	ed with the ail from the so Band of dians were s date. The
			(i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as define in Public Resources Code Section 5020.1(k), or (i) According to the California Historic Resources <sup>24</sup> in to be eligible under the Public Resources Code Sec be less than significant.				
	0		<ul> <li>(ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth is subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.</li> <li>(ii) No significant resources listed as defined in the impacted by the proposed LPG facility construction</li> </ul>				
XIX.	UTI	ILITIE	S AND SERVICE SYSTEMS Would the project:				
	a)	expandrain facilit environa) The relocation	ire or result in the relocation or construction of new or nded water, wastewater treatment or stormwater age, electric power, natural gas, or telecommunications ies, the construction of which could cause significant commental effects?  The proposed bulk plant is for storage and distribution of ation or construction of a new expanded water, wastever telecommunication facilities, the construction of which	vater treatment o	or stormwater drainag	e, electric pow	er, natural

		Potentially Significant Impact (PSI)	Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact
	on October 10, 2022 ICPDS received a comment letter from a water service the applicant will be subject to the satisfactio from time to time, including, but not limited to fees and charg 19, 2022 ICPDS received a comment email from the Imperial comments for this project. Any impacts are considered to be	n of terms and les, water conse County Division	conditions establishe ervation measures, etc. n of Environmental He	d by CVWD an Furthermore, o	d imposed on October
b)	Have sufficient water supplies available to serve the project from existing and reasonably foreseeable future development during normal, dry and multiple dry years?  b) The proposed project does not anticipate a change to previously stated on sections "(X) - Hydrology and Water applicant will be subject to the satisfaction of terms and c imposed from time to time, including, but not limited to fees are expected to be less than significant.	Quality" and (2 conditions estate	XIX)(a) above, for don plished by Coachella	nestic water so Valley Water D	ervice, the istrict and
c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?  c) Less than significant impacts are expected since the project wastewater treatment. The applicant shall contact Public V	ct does not incl	lude any structures tha	⊠ at will require w requirements.	 vastewater
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?  d) Excess solid waste generation is not expected by the propo	sed LPG bulk pl	ant. Less than significa	⊠ ant impacts are	 expected.
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?  e) As previously stated on item (XIX)(d) above, the propose industrial on the parcel. The proposed LPG bulk plant shall constatutes and regulations related to solid waste. Any impact are	omply with fede	ral, state, and local ma	nagement and	
	ILDFIRE TO THE TOTAL THE TOTAL TO THE TOTAL TOTAL TO THE				
If loc	ated in or near state responsibility areas or lands classified as very hig	gh fire hazard sev	verity zones, would the F	Project:	
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?			$\boxtimes$	
b)	As previously stated under item (IX)(f) — "Hazards and Hazard substantially impair an adopted emergency response plan or received a comment letter from the Imperial County Fire Dep Response Plan for covering possible emergencies (Examp According to ICFD, there shall be at least one employee "or facility to coordinate with emergency responders and provide coordinator shall be thoroughly familiar with the facility, regulations on hazardous material storage and release. Adher significant.  Due to slope, prevailing winds, and other factors, exacerbate	or emergency e partment <sup>19</sup> advis ples: fire, leak n-call" at all time e information ab the emergency	evacuation plan. On No sing the applicant shat and/or spill, earthquat es available to respon bout the site if needed. response plan and t	ovember 3, 202 Il provide an Elike, other emend to emergence The emergence The emergence Tederal, state,	22, ICPDS mergency rgencies). ies at the cy contact and local
	wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?  b) The proposed project is not located within a Very High Fire slope, prevailing winds, and other factors, exacerbate wildfire concentrations from a wildfire or the uncontrolled spread of a adherence and compliance of ICFD's standards.	risks, and there	by expose project occ	upants to pollu	ıtant
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the				

XX.

Potentially

Potentially Significant Impact (PSI) Potentially Significant Unless Mitigation Incorporated (PSUMI)

Less Than Significant Impact (LTSI)

No Impact (NI)

environment?

	c) As previously stated under item (XV)(a)(1) – "Public Service Fire Department <sup>19</sup> , an approved fire hydrant installed within feet away. This requirement will help with a reliable water so noted in the facility fire safety analysis. Additionally, an ad Adherence and compliance with ICFD's requirements will be	n 300 feet of the fa source for tank cod lequate number of	icility. Currently the oling within 10 minu fire extinguishers	closest fire hyd utes of a fire emo onsite should be	Irant is 800 ergency as
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?  d) As previously stated on item (VII)(a)(4) above, per Imper "Landslide Activity Map <sup>14a</sup> ," Figure 2, the proposed project within the proposed project site is generally flat. Developm edition of the California Building Code as well as to go throug stated under item (XV)(a)(1) above, per comment letter from the in compliance at all times with requirements in the California dompliance to the California Building Code and Imperial any impacts to less than significant.	t is not located wi ent on the parcel v gh a ministerial bui the Imperial Count nia Fire Code and	thin a landslide act will be subjected to Iding permit review. y Fire Department <sup>19</sup> , local ordinances and	tivity area. The to compliance with Additionally, as , the proposed proposed proposed proposed proposed proposed proposed prequirements.	opography n the latest previously roject shall Adherence

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; Sundstrom v. Courtly of Mendocino, (1988) 202 Cal. App. 3d 296; Leonoff v. Monterey Board of Supervisors, (1990) 222 Cal. App. 3d 1337; Eureka Citizens for Responsible Govt. v. City of Eureka (2007) 147 Cal. App. 4th 357; Protect the Historic Amador Water Agency (2004) 116 Cal. App. 4th at 1109; San Franciscans Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal. App. 4th 656.

Revised 2009- CEQA Revised 2011- ICPDS Revised 2016 – ICPDS Revised 2017 – ICPDS Revised 2019 – ICPDS

Potentially Significant Impact (PSI) Potentially Significant Unless Mitigation Incorporated (PSUMI)

Less Than Significant Impact (LTSI)

No Impact (NI)

#### **SECTION 3**

#### **III. MANDATORY FINDINGS OF SIGNIFICANCE**

The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, eliminate tribal cultural resources or eliminate important examples of the major periods of California history or prehistory?		
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)		
c)	Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?		

#### IV. PERSONS AND ORGANIZATIONS CONSULTED

This section identifies those persons who prepared or contributed to preparation of this document. This section is prepared in accordance with Section 15129 of the CEQA Guidelines.

#### A. COUNTY OF IMPERIAL

- Jim Minnick, Director of Planning & Development Services
- Michael Abraham, AICP, Assistant Director of Planning & Development Services
- Diana Robinson, Planning Division Manager
- Gerardo A. Quero, Project Planner
- Imperial County Air Pollution Control District
- Department of Public Works
- Fire Department
- Ag Commissioner
- Environmental Health Services
- Sheriff's Office

#### **B. OTHER AGENCIES/ORGANIZATIONS**

- Quechan Indian Tribe
- Imperial Irrigation District
- California Department of Toxic Substances Control: Certified Unified Program Agencies (CUPA) Imperial
- Coachella Valley Water District

(Written or oral comments received on the checklist prior to circulation)

#### V. REFERENCES

1. Imperial County General Plan: Circulation and Scenic Highway Element

https://www.icpds.com/assets/planning/circulation-scenic-highway-element-2008.pdf

2. California State Scenic Highway System Map

https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa

 California Farmland Mapping & Monitoring Program: Imperial County Important Farmland Map 2018 https://maps.conservation.ca.gov/DLRP/CIFF/

4. Imperial County General Plan Land Use Plan Map

https://icpds.maps.arcqis.com/apps/webappviewer/index.html?id=078e1e32c6dc4223ba8c7d69d7c6c383

- 5. Imperial County Air Pollution Control District comment letter dated October 14, 2022
- 6. Imperial County General Plan: Conservation and Open Space Element

https://www.icpds.com/assets/planning/conservation-open-space-element-2016.pdf

- a) Figure 1: Sensitive Habitat Map
- b) Figure 2: Sensitive Species Map
- c) Figure 5: Areas of Heighten Historic Period Sensitivity Map
- d) Figure 6: Known Areas of Native American Cultural Sensitivity Map
- e) Figure 8: Existing Mineral Resources Map
- 7. National Wetlands Inventory Map: Surface Waters and Wetlands

https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

- 8. Quechan Indian Tribe comment email dated October 3, 2022
- Imperial Irrigation District comment letter dated October 4, 2022
- 10. California Geological Survey Hazard Program: Alquist-Priolo Fault Hazard Zones

https://gis.data.ca.gov/maps/ee92a5f9f4ee4ec5aa731d3245ed9f53/explore?location=32.538703%2C-110.920388%2C6.00

11. California Department of Conservation: Fault Activity Map

https://maps.conservation.ca.gov/cgs/fam/

12. United States Geological Survey's Quaternary Faults Map

https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf

13. California Tsunami Data Maps

https://www.conservation.ca.gov/cgs/tsunami/maps

14. Imperial County General Plan: Seismic and Public Safety Element

https://www.icpds.com/assets/planning/seismic-and-public-safety.pdf

- a) Figure 2: Landslide Activity Map
- b) Figure 3: Erosion Activity Map
- 15. Imperial County Division of Environmental Health comment email dated October 19, 2022
- 16. California Department of Toxic Substances Control (DTSC)-Imperial: Certified Unified Program Agencies (CUPA) comment email dated October 19, 2022
- 17. California Department of Toxic Substances Control: EnviroStor

https://www.envirostor.dtsc.ca.gov/public/

18. Imperial County Airport Land Use Compatibility Maps

https://www.icpds.com/planning/maps/airport-land-use-compatibility-maps

- 19. Imperial County Fire Department comment letter dated November 3, 2022
- 20. Cal Fire: Fire Hazard Severity Zones Maps Imperial County

https://osfm.fire.ca.gov/media/6680/fhszs\_map13.pdf

- 21. Coachella Valley Water District comment letter dated October 10, 2022
- 22. Federal Emergency Management Agency (FEMA) Flood Map Service Center: Flood Insurance Rate Map https://msc.fema.gov/portal/search?AddressQuery=851%20pitzer%20road%20heber%20ca#searchresultsanchor
- 23. Imperial County General Plan: Noise Element

https://www.icpds.com/assets/planning/noise-element-2015.pdf

24. California Historic Resources: Imperial County

https://ohp.parks.ca.gov/ListedResources/?view=county&criteria=13

"County of Imperial General Plan EIR", prepared by Brian F. Mooney & Associates in 1993;
 and as Amended by County in 1996, 1998, 2001, 2003, 2006 & 2008, 2015, 2016.

#### VI. NEGATIVE DECLARATION – County of Imperial

The following Negative Declaration is being circulated for public review in accordance with the California Environmental Quality Act Section 21091 and 21092 of the Public Resources Code.

Project Name: Conditional Use Permit (CUP) #22-0021

Project Applicant: Jesus and Liliana Aguirre (Aguirre's Propane, LLC)

Project Location: 1338 Glendale Avenue, Salton City, CA 92274

**Description of Project:** The applicants, Jesus & Liliana Aguirre (Aguirre's Propane, LLC), propose the construction and operation of a Liquefied Petroleum Gas (LPG) bulk plant to store and distribute Liquid Propane Gas for commercial business purposes.

VII.	FINDIN	IGS						
determ	nine if th	ne project m		nificant effec				n Initial Study to ng this Negative
			ows that there is d a NEGATIVE				may have a si	gnificant effect on
		The In	nitial Study ident	tifies potential	ly significant e	effects but:		
	(1)	was releas		view would av				gative Declaration oint where clearly
	(2)	There is no the enviror		idence before	the agency th	nat the project i	may have a si	gnificant effect on
	(3)	Mitigation insignificar		equired to ens	ure all potenti	ally significant i	impacts are re	duced to levels of
		A MIT	IGATED NEGA	TIVE DECLAF	RATION will b	e prepared.		
to suppavailab	port this ole for re	finding are	included in the County of Impe	attached Init	tial Study. Th	e project file a	and all related	quired. Reasons d documents are 801 Main Street,
				NO	TICE			
The pu	ıblic is in	vited to con	nment on the p	proposed Neg	gative Declara	ation during tl	ne review per	iod.
Date of	Determi	nation	Jim Minnick,	, Director of Pl	lanning & Dev	elopment Serv	ices	
		•	wledges and ac all Mitigation Me	•				mittee (EEC) and
					Applicar	nt Signature		Date

#### **SECTION 4**

VIII.

**RESPONSE TO COMMENTS** 

(ATTACH DOCUMENTS, IF ANY, HERE)

# MITIGATION MONITORING & REPORTING PROGRAM (MMRP) IX. (ATTACH DOCUMENTS, IF ANY, HERE)

# **COMMENT LETTERS**

#### **Gerardo Quero**

From:

Quechan Historic Preservation <historicpreservation@quechantribe.com>

Sent:

Monday, 3 October, 2022 7:52 AM

To: Subject:

Aimee Trujillo; ICPDSCommentLetters RE: CUP22-0021 Request for Comments

# **CAUTION:** This email originated outside our organization; please use caution.

This email is to inform you that we do not wish to comment on this project.

From: Aimee Trujillo [mailto:aimeetrujillo@co.imperial.ca.us]

Sent: Friday, September 30, 2022 3:46 PM

**To:** Carlos Ortiz; Sandra Mendivil; Jolene Dessert; Margo Sanchez; Ana L Gomez; Belen Leon; Monica Soucier; Ryan Kelley; Miguel Figueroa; Rosa Lopez; Vanessa Ramirez; Jeff Lamoure; Alphonso Andrade; Jorge Perez; Mario Salinas; Janette Angulo; Alfredo Estrada Jr; Robert Malek; Andrew Loper; Guillermo Mendoza; John Gay; Ray Loera - Sheriff; Manuel Deleon; Vargas, Donald A; sara.Lockett@parks.ca.gov; jbarrett@cvwd.org; incoming@cvwd.org; Mitch Mansfield; info@saltonsea.com; roger.sanchez-rangel@dot.ca.gov; robert.krug@dtsc.ca.gov; hhaines@augustinetribe.com; info@augustinetribe-nsn.gov; Marcus Cuero; jmesa@campo-nsn.gov; Quechan Historic Preservation Officer; 'Jordan D. Joaquin'; thomas.tortez@torresmartinez-nsn.gov; joseph.mirelez@torresmartinez-nsn.gov; jfreeman@semprautilities.com; byronfrontier@yahoo.com

**Cc:** Jim Minnick; Michael Abraham; Diana Robinson; Gerardo Quero; Aimee Trujillo; Allison Galindo; John Robb; Laryssa Alvarado; Leslie Martinez; Maria Scoville; Melina Rizo; Rosa Soto

Subject: CUP22-0021 Request for Comments

Good afternoon,

Please see attached Request for Comments packet for CUP22-0021/ APN 014-031-005-000 located at 1338 Glendale Ave, Thermal CA 92274.

Comments are due by October 17th at 5:00PM.

In an effort to increase the efficiency at which information is distributed and reduce paper usage, the Request for Comments packet is being sent to you via this email.

Should you have any questions, please feel free to contact Gerardo at (442) 265-1736, or submit your comment letters to ICPDScommentletters@co.imperial.ca.us.

Thank you,

# Aimee Trujillo

Office Assistant III
Imperial County Planning & Development Services
801 Main Street
El Centro, CA 92243
(442) 265-1736
(442) 265-1735 (Fax)
aimeetrujillo@co.imperial.ca.us

RECEIVED

OCT 0 8 2022

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES



Office of the Sarioultural Sealer of Weights and Measures

Agricultural Commissioner Sealer of Weights and Measures

OCT 04 2022

Asst, Agricultural Commissioner st. Sealer of Weights and Measures

#### POINT-OF-SALE SCANNERS & ELECTRONIC PRICING DEVICES

The Imperial County Weighing and Measuring Devices and Point-of-Sale Systems ordinance (Chapter 5.68) requires businesses to register with the Imperial County Sealer of Weights and Measures Department and pay an annual registration fee. Registration certificate fees are based on the number of point of sale stations at each retail location. This registration certificate is required in addition to any other certificate, license or permit which may be required by the county, cities, or any public entity. Any registration certificate for which fees have not been paid within forty –five (45) days from the date that such payment is due, will be subject to a twenty percent (20%) penalty. See the attached fee schedule for reference.

All retail locations that utilize a point of sale system are subject to the county ordinance. Such systems include Universal Product Code (UPC) scanners, price look-up codes, or any other system that relies on the retrieval of electronically stored information to complete a transaction. Per the ordinance, all systems shall be available for testing and inspection by the county sealer of weights and measures.

The Imperial County Weights and Measures Office enforces the California Business and Professions Code as well as the California Code of Regulations as it pertains to point-of-sale systems. Below is a summary of applicable code sections:

In accordance to the California Business and Professions Code § 12024.2 and § 12024.6, it is unlawful for any person, at the time of sale of a commodity, to do any of the following:

- Charge an amount greater than the price, or to compute an amount greater than a true extension of a price per unit, that is then advertised, posted, marked, displayed, or quoted for that commodity.
- Charge an amount greater than the lowest price posted on the commodity itself or on a shelf tag that corresponds to the commodity, notwithstanding any limitation of the time period for which the posted price is in effect.

• No person, firm, corporation, or association shall advertise, solicit, or represent by any means, a product for

sale or purchase if it is intended to entice a customer into a transaction different from that originally

represented.

In accordance to the California Business and Professions Code sections § 13300-13303 and § 12024.6:

• Any business that uses a point-of-sale system must have a display of the prices charged visible to the

customer from a reasonable and typical position

• When a price reduction or discount regarding an item is advertised, the checkout system customer indicator

shall display either the discounted price for that item, or alternatively, the regular price and a credit or

reduction of the advertised savings

• Any surcharges and the total value to be charged for the overall transaction also shall be displayed for the

consumer at least once before the consumer is required to pay for the goods or services

"Point-Of-Sale System" means any computer or electronic price look-up system that retrieves the price of the

item being purchased

The Imperial County Sealer of Weights and Measures is authorized to levy a civil penalty against a person violating

any provision of this law or regulation adopted pursuant to this law, of not more than one thousand dollars

(\$1,000) for each violation.

Please remember that it is the responsibility of the owner/operator of a business to obtain a current registration

from the Sealer's Office before using an electronic point-of-sale checkout system. Our office is open to the public

from 8:00AM to 5:00PM, Monday through Friday. If you have any questions or need assistance, please contact us

at (442) 265-1500. We will be happy to assist you.

Sincerely,

Margo Sanchez

**Deputy Sealer of Weights & Measures** 

**Special Projects Division** 



Carlos Ortiz Agricultural Commissioner Sealer of Weights & Measures

Jolene Dessert Asst. Agricultural Commissioner Asst. Sealer of Weights & Measures

# ANNUAL REGISTRATION/RENEWAL APPICATION (expires December 31, 2022)

Registr	ation No.:		F	Please update	any outdated	or missing info	ormation.
Company Headqu	uarters:						
Name:			_ (	Contact:			
Mailing Address:				Phone:			
Physical Location	:						
Business Name:			Primary C	Contact:			
hysical Address:				Phone:			
			=				
Device Type	Location Fee	Quantity	Fee per Device	Device Fee Subtotal	DMS Fee per Device	DMS Fee Subtotal	Device Total
					TOTAL	FEES DUE:	
For Dep	partment Use Only			Make check	or money orde	r navable to:	
MS Receipt #:	DMS Date:		1	MPERIAL COU	-		;
Deposit #:			852 Broadway El Centro, CA 92243				
I CERTIFY TH	AT THE INFORMATION	SUBMITTED	IN THIS AI	PPLICATION I	S TRUE AND	CORRECT.	
nt Name of Authorized R	epresentative		Signature			Date	

We gladly accept checks.

If your check is returned unpaid, your account will be debited electronically for the original amount and electronically or via paper for the state's maximum allowable service fee. Payment by check constitutes authorization of these transactions. You may revoke this authorization by calling (800) 666-5222, ext. 2, to arrange payment for any outstanding checks and service fees due, www.fiserv.com

#### **County of Imperial Division of Weights and Measures**

#### Registration Fees = Location fee + Device fee + DMS fee (State Surcharge)

Fees are based on a statewide fee structure approved by the State Legislature and Governor. Fees partially offset the cost of administering the commercial weighing and measuring program, and are based on the number and type(s) in use per location. These fees have been adopted in the Imperial County Ordinance Chapter 5.68 and are authorized by the California Business and Professions Code: Device Fees Section 12240(f)-(t); Location Fee Section 12240(u); State Administrative Fee: Section 12241 and California Code of Regulations Title 4, Division 9, Chapter 3, Article 3, Section 4075.

All fees are due and payable by January 1st. Any registration paid after forty-five (45) days will be considered delinquent and be subject to penalties. The penalties are twenty percent (20%) of total device registration fee and location fee accruing each forty-five (45) days in arrears.

Device Location Fee: Each location (scanner/point-of-sale excluded) is charged a location fee of \$100. A location is considered a business with one or more types of devices that require specialized testing equipment that will necessitate more than one trip. Additionally, if a commercial device is installed on a vehicle, each vehicle is considered a single location.

Device Registration Fees	Fee per Device	DMS fee per Device
CNG Meter	\$20.00	\$16.00
Computing Scales <2,000#	\$20.00	\$2.20
Counter Scale < 2,000#	\$50.00	\$2.20
Electric Submeter	\$3.00	\$0.50
Fabric/Cord/Wire	\$20.00	\$2.20
Hanging Scale < 2,000#	\$50.00	\$2.20
Hanging Scale 2,000-10,000#	\$150.00	\$16.00
Hopper & Tank > 10,000#	\$250.00	\$24.00
Hopper & Tank 2,000-10,000#	\$150.00	\$16.00
L.P.G. Meter	\$185.00	\$16.00
Livestock Scale > 10,000#	\$150.00	\$24.00
Livestock Scale 2,000-10,000#	\$100.00	\$16.00
Misc. Measuring Devices	\$20.00	\$2.20
Misc. Weighing Devices < 2,000#	\$50.00	\$2.20
Monorail/Meat < 2,000#	\$50.00	\$2.20
Monorail/Meat 2,000-10,000#	\$150.00	\$16.00
Odometers	\$60.00	\$2.20
Platform/Dormant <2,000#	\$50.00	\$2.20
Platform/Dormant > 10,000#	\$250.00	\$16.00
Platform/Dormant 2,000-10,000#	\$150.00	\$16.00
Class II Scale (Non-prescription/jewelry)	\$20.00	\$2.20
Pres/Jewel Scale <2,000#	\$80.00	\$2.20
Railway Scale > 10,000#	\$250.00	\$24.00
Retail Meter Fuel (Gas pumps)	\$20.00	\$2.20
Retail Water Meter (Dispensers, Vending)	\$20.00	\$2.20
Vehicle Meter (Any vehicle mounted meter)	\$75.00	\$2.20
Vehicle Scale > 10,000#	\$250.00	\$24.00
Water Submeters	\$2.00	\$0.50
Wholesale Meter (Stationary Hi-volume sale)	\$75.00	\$2.20
Scanner/Point of Sale Registration Fees	Fee per Scanners	DMS Fee per Scanners
Scanners (1-3)	\$89.00	\$0.00
Scanners (4-16)	\$129.00	\$0.00
Scanners (17-30)	\$190.00	\$0.00
Scanners (31 or more)	\$240.00	\$0.00

Please note that some device types cap at \$1,000 per location. If you have any questions please call the Division of Weights and Measures at (442) 265-1500.

#### Footnotes:

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Editor's note—Sec. II of Ord. No. 1492, adopted Oct. 1, 2013, amended Ch. 5.68 in its entirety to read as herein set out. Former Ch. 5.68 pertained to a similar subject matter and derived from Ord. 1358, 2002; Ord. 1382, 2004; and Ord. 1416, 2006.

#### 5.68.010 - County sealer of weights and measures.

- A. Pursuant to the provisions of Section 12200 of the Business and Professions Code of the state of California, there is created in the county of Imperial the office of county sealer of weights and measures. The county sealer of weights and measures shall have the authority, duties and responsibilities of such office as provided by the provisions of Article 2 of Chapter 2 of <u>Division 5</u> of the Business and Professions Code of the state of California, and as further provided for by the board of supervisors of the county of Imperial.
- B. The county board of supervisors establishes the maxim um fees as set forth below, which are necessary to cover the cost of services under this chapter. Such fees shall not exceed the total cost of inspecting or testing weighing and measuring devices as required by law. The sealer is directed to collect such fees. If the sealer finds that the cost of providing such services is less than the maximum amount, the sealer shall bring a fee schedule reduction to the board of supervisors.

(Ord. No. 1492, § II, 10-1-13)

5.68.020 - Inspection and testing of weighing and measuring devices.

- A. No weight, scale, beam or measure of any kind, instrument or mechanical device for weighing or measurement, or tool, appliance and accessories connected with any or all such measures, instruments or appliances may be sold or used for commercial purposes in the county of Imperial, unless inspected, tried or tested by the county sealer of weights and measures appointed pursuant to Section 12200 or 12201 of the Business and Professions Code of the state of California, as such sections now exist or may hereafter be amended.
- B. Upon the written request of any person, firm or corporation, the county sealer of weights and measures may calibrate, test, weigh and measure, and certify to the accuracy of, weights and measures and weighing and measuring devices, and instruments, tools and accessories connected therewith used for noncommercial purposes.

(Ord. No. 1492, § II, 10-1-13)

#### 5.68.030 - Registration of certain weighing and measuring devices.

- A. It is unlawful for any person to use any weighing or measuring instrument not specifically excluded by Section 12240 of the Business and Professions

  Code for commercial purposes, such as that section now exists or may hereafter be amended, unless such device has been inspected, tried or tested pursuant to Section 5.68.010 of this chapter and, in addition, such device and its location are registered with the county sealer of weights and measures.
- B. Applications for registration of weighing or measuring devices, and renewal thereof, shall be filed with the county sealer. The county sealer shall issue registration certificates that shall be valid upon receipt of the applicable fee prescribed in the current agricultural commissioner's fee schedule.

  Registration shall be effective for one calendar year or portion thereof and shall expire on December 31st of that year. Registration shall be renewed annually.
- C. Every person using any weighing or measuring device or point-of-sale station for which a registration certificate is required under the provisions of this chapter shall keep such certificate (or a true and accurate copy thereof) available for inspection by the county sealer of weights and measures at all times at the location where such instrument(s) is/are being used.

#### 5.68.040 - Fees and noncompliance penalties—Weighing and measuring devices.

- A. Annual registration fees for a business that uses a commercial weighing or measuring device or devices shall consist of a business location fee; a Department of Food and Agriculture administrative fee, as specified in Section 12241 of the Business and Professions Code; and a device fee, as specified in subdivision C of this section. The business location fee and the device fee for any business registered by a new owner after July 1 shall only be charged half of the fee listed below for that calendar year and there shall be no annual registration fees for any business registered by a new owner after December 1 for that calendar year.
- B. The business location fee shall be up to one hundred dollars (\$100.00) per calendar year. For the purposes of this section, a single business location is defined as:
  - 1. Each business location that uses one or more categories or types of commercial devices as set forth in subdivision C.1. to C.8. inclusive, and in subdivision C.10.; that require the use of specialized testing equipment; and that necessitate not more than one inspection trip by a weights and measures official.
  - 2. Each vehicle, except for those vehicles that are employed in vehicle rental transactions, in which one or more commercial devices is installed and used.
  - 3. (a) For vehicles that are employed in vehicle rental transactions and that are not subject to Section 1936 of the Civil Code, each business location at

which vehicles are stored or maintained by a vehicle rental company for the purpose of renting vehicles to customers.

- (b) A facility that meets all of the following criteria shall not be considered a business location for the purposes of this paragraph;
  - (i) The facility is not wholly, or in any part, owned, leased, or operated by the vehicle rental company.
  - (ii) The facility is not operated or staffed by an employee of the vehicle rental company.
  - (iii) The facility stores or maintains, on a temporary basis, vehicles at the location for customer convenience.
- (c) If a person files a complaint with the county sealer regarding the accuracy of an odometer in a vehicle found or located at a facility described in subparagraph (b), the county sealer may charge a fee to the operator of the vehicle rental company sufficient to recover, but not to exceed, the reasonable cost of testing the device in investigation of the complaint.
- C. Device fees shall be assessed as follows:
  - 1. For marinas, mobile home parks, recreational vehicle parks, and apartment complexes, where the owner of the marina, park, or complex owns and is responsible for the utility meters, the device fee shall not exceed the following:
    - (a) For water submeters, two dollars (\$2.00) per device per space or apartment.
    - (b) For electric submeters, three dollars (\$3.00) per device per space or apartment.
    - (c) For vapor submeters, four dollars (\$4.00) per device per space or apartment.
  - 2. For weighing devices, other than livestock, with capacities of ten thousand (10,000) pounds or greater, the device fee shall not exceed two hundred fifty dollars (\$250.00) per device; for weighing devices, other than livestock scales, with capacities of at least two thousand (2,000) pounds but less than ten thousand (10,000) pounds, the device fee shall not exceed one hundred fifty dollars (\$150.00) per device.
  - 3. For livestock scales with capacities of ten thousand (10,000) pounds or greater, the device fee shall not exceed one hundred fifty dollars (\$150.00) per device; for livestock scales with capacities of at least two thousand (2,000) pounds but less than ten thousand (10,000) pounds, the device fee shall not exceed one hundred dollars (\$100.00) per device.
  - 4. For liquefied petroleum gas (LPG) meters, truck mounted or stationary, the device fee shall not exceed one hundred eighty-five dollars (\$185.00) per device.
  - 5. For wholesale and vehicle meters, the device fee shall not exceed seventy-five dollars (\$75.00) per device.
  - 6. For computing scales, the device fee shall not exceed twenty dollars (\$20.00) per device. For purposes of this subdivision, a computing scale shall be a weighing device with a capacity of less than one hundred (100) pounds that indicates the money value of any commodity weighed, at predetermined unit prices, throughout all or part of the weighing range of the scale. For the purposes of this subdivision, the portion of the annual registration fee consisting of the business location fee and the device fees authorized by this subdivision shall not exceed the sum of one thousand dollars (\$1,000.00) for each business location.
  - 7. For jewelry and prescription sales, the device fee shall not exceed eighty dollars (\$80.00) per device.
  - 8. For weighing devices, other than computing, jewelry, and prescription scales as defined in subdivisions C.6. and C.7., with capacities of at least one hundred (100) pounds but less than two thousand (2,000) pounds, the device fee shall not exceed fifty dollars (\$50.0) per device.
  - 9. For vehicle odometers utilized to charge mileage usage fees in vehicle rental transactions or in computing other charges for service, including, but not limited to, ambulance, towing, or limousine services, the device fee shall not exceed sixty dollars (\$60.00) per device. For vehicle odometers utilized to charge mileage usage fees in vehicle rental transactions involving non-passenger vehicles that are not subject to Section 1936 of the Civil Code, the portion of the annual registration fee consisting of the business location fee and the device fee shall not exceed the sum of three hundred forty dollars (\$340.00) for each business location.
  - 10. For all other commercial weighing or measuring devices not listed in subdivisions C.1. to C.9., inclusive, the device fee shall not exceed twenty dollars (\$20.00) per device. For the purposes of this subdivision, the total portion of the annual registration fee consisting of the business location fee and the device fees authorized by this subdivision shall not exceed the sum of one thousand dollars (\$1,000.00), for each business location.
- D. The registration fees assessed pursuant to this section shall be up to the maximum charges prescribed in Section 12240 of the California Business and Professions Code.
- E. The following fees will be charged for the re-inspection or reexamination of those devices that have been previously inspected and found incorrect or deficient, and for inspection or examination of any weighing device at the request of the owner, distributor or repair person. Electric meters will not be re-inspected. All charges will be made on a portal-to-portal basis and will not be charged for devices registered pursuant to subsection B. of this section:

  Small capacity scales, per hour .....\$60.00

Large capacity scales (All scales exceeding 3,000 pounds capacity), per hour .....\$110.00

Retail meters, per hour .....\$60.00

Wholesale meters, per hour .....\$110.00

Liquefied petroleum gas meters, per hour .....\$110.00

All other commercial devices .....\$60.00

F. Standby fees shall be paid at the above hourly rates for the time the sealer of weights and measures is requested to wait, for the convenience of the



owner, distributor or repair person, while the weighing and measuring device is placed into proper condition to be tested or inspected.

G. Any registration certificate for which the fees have not been paid within forty-five (45) days from the date such payment is due will be subject to a twenty percent (20%) penalty, with a like amount accruing each forty-five (45) days which elapse without payment received.

(Ord. No. 1492, § II, 10-1-13; Ord. No. 1501, § 1, 10-28-14)

5.68.050 - Inspection and testing of point-of-sale devices.

All individual, separate locations where consumers are charged for the purchase of commodities by using equipment that is capable of recovering electronically stored price information by reading a bar code printed on the product or on a label, including, but not limited to, equipment that uses Universal Product Code, price look-up codes or any other system that relies on the retrieval of electronically stored information to complete a transaction of commerce between a retailer and a customer that are used for commercial purposes in the county of Imperial shall be available for testing and inspection by the county sealer of weights and measures.

(Ord. No. 1492, § II, 10-1-13)

5.68.060 - Registration certificate requirements for point-of-sale devices.

- A. It is unlawful for a person to use a point-of-sale station for commercial purposes without first obtaining a registration certificate in accordance with the provisions of this chapter. A separate registration certificate shall be obtained for each location. The registration certificate shall be in addition to any other certificate, license or perm it which may be required by the county or any public entity.
- B. Registration certificates shall not be issued by the county until all applicable fees as set forth in Section 5.68.070 of this chapter have been paid.

5.68.070 - Fees and noncompliance penalties—Point-of-sale devices.

A. Registration certificate fees for point-of-sale devices shall be based upon the number of sales stations at each retail location and shall be as follows:

1-3 point-of-sale devices .....\$89.00

4-16 point-of-sale devices .....\$129.00

17—30 point-of-sale devices .....\$190.00

More than 30 point-of-sale devices .....\$240.00

B. Any registration certificate for point-of-sale devices for which the fees have not been paid within forty-five (45) days from the date such payment is due will be subject to a twenty percent (20%) penalty, with a like amount accruing each forty-five (45) days which elapse without payment received.

(Ord. No. 1492, § II, 10-1-13)





October 4, 2022

# RECEIVED

OCT 04 2022

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

Mr. Gerardo Quero Planner I Planning & Development Services Department County of Imperial 801 Main Street El Centro, CA 92243

SUBJECT: LPG Storage and Distribution Facility Project, CUP22-0021

Dear Mr. Quero:

On September 30, 2022, the Imperial Irrigation District received from the Imperial County Planning & Development Services Department, a request for agency comments on Conditional Use Permit application No. 22-0021 for a liquid petroleum gas storage and distribution facility project. The applicants, Jesus and Liliana Aguirre, propose the construction and operation of a commercial LPG storage and distribution facility at 1338 Glendale Ave, Thermal CA (APN 014-031-005-000).

The IID has reviewed the application and has the following comments:

- 1. If the project requires temporary and/or permanent electrical service, the applicant should be advised to contact Gabriel Ramirez, IID project development service planner, at (760) 339-9257 or e-mail Mr. Ramirez at <a href="mailto:gramirez@iid.com">gramirez@iid.com</a> to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website <a href="http://www.iid.com/home/showdocument?id=12923">http://www.iid.com/home/showdocument?id=12923</a>), the applicant will be required to submit a complete set of approved project plans by the County of Imperial (including AutoCAD files of the site plan), project schedule, estimated in-service date, electrical one-line diagram, electrical loads and panel schedules, electrical panel specifications (size, voltage and location), and the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of electrical service to the project. The applicant shall be responsible for all costs and mitigation measures related to providing new electrical service to the project.
- 2. Electrical capacity is limited in the project area. A circuit study may be required. Any system improvements or mitigation identified in the circuit study to enable the provision of electrical service to the project shall be the financial responsibility of the applicant.
- 3. Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at <a href="https://www.iid.com/about-iid/department-directory/real-estate">https://www.iid.com/about-iid/department-directory/real-estate</a>. The IID Real Estate

Gerardo Quero October 4, 2022 Page 2

Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way.

4. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA) documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at <a href="mailto:dvargas@iid.com">dvargas@iid.com</a>. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas

Compliance Administrator II



# COACHELLA VALLEY WATER DISTRICT

Established in 1918 as a public agency

GENERAL MANAGER Jim Barrett

CLERK OF THE BOARD Sylvia Bermudez

ASSISTANT GENERAL MANAGER Robert Cheng

ASSISTANT GENERAL MANAGER
Dan Charlton

October 10, 2022

Gerado Quero Imperial County Planning and Building Department 801 Main Street El Centro, CA 92243 RECEIVED

OCT 13 2022

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

Dear Mr. Quero:

Subject: Imperial County Planning & Development Services, CUP 22-0021, LPG Bulk Plant, Storage and Distribution of LPG Gas, APN 014-031-005, 1338 Glendale Avenue, Thermal

This area is designated Zone X on Federal Flood Insurance rate maps, which are in effect at this time by the Federal Emergency Management Agency (FEMA).

Flood protection measures for local drainage and valley floor drainage shall comply with California Drainage Law and provide that stormwater flows are received onto and discharged from this property in a manner that is reasonably compatible with predevelopment conditions.

Imperial County (County) shall require mitigation measures to be incorporated into the development to prevent flooding of the site or downstream properties. These measures shall require 100 percent on-site retention of the incremental increase of runoff from the 100-year storm. In addition, flood protection measures shall comply with California Drainage Law and provide that offsite stormwater flows are received onto the property and discharged from the property in a manner that is reasonably compatible with redevelopment conditions. Coachella Valley Water District (CVWD) requests review of said flood protection measures for compliance with California Drainage Law from a regional valley floor drainage perspective.

The project is located within the service area of CVWD for the provision of domestic water service. The initiation of said service to this area will be subject to the satisfaction of terms and conditions established by CVWD and imposed from time to time, including but not limited to fees and charges, water conservation measures, etc.

CVWD may need additional facilities to provide for the orderly expansion of its domestic water systems. These facilities may include pipelines, wells, reservoirs, booster pumping stations, and other facilities. The developer may be required to construct/install these facilities and then convey said facilities to CVWD along with the land and/or easements on which these facilities will be located. The terms and conditions for the planning, design, construction/installation, and conveyance of property interests shall be determined by CVWD pursuant to its rules and regulations as said requirements may be revised from time to time. These sites shall be shown on the parcel map as lots and/or easements to be deeded to CVWD for "CVWD public services" purposes.

7

Coachella Valley Water District P.O. Box 1058 Coachella, CA 92236 Phone (760) 398-2651 Fax (760) 398-3711

www.**cvwd**.org an Equal Opportunity Employer Gerado Quero Imperial County Planning and Building Department October 10, 2022 Page 2

This notice of domestic water service availability only applies to the specific property for which it was issued and shall expire three (3) years from date of issuance. Unless or until all requirements for the initiation of service are met, the developer shall not be deemed to have any vested right or other commitment to receive water and/or sanitation service. In the event all of the terms, conditions, fees and charges are not satisfied on or before the expiration date, this notice shall expire. Upon expiration, the developer will be required to submit a new application and otherwise comply with any and all new or amended requirements for the provision of service as may be determined by CVWD pursuant to its rules and regulations.

This parcel may be encumbered by a CVWD domestic water easement on the northerly side of the parcel.

Domestic water service remains at all times subject to changes in regulations adopted by CVWD's Board of Directors including reductions in, or suspensions of, service.

If you have any questions, please call Tommy Fowlkes, Development Services Supervisor, extension 3535.

Sincerely,

Director of Engineering

TH: ms\Eng\Dev Srvs\2022\Oct\DRL PZ 22-14058 Imperial County.doc

File: 0163.1, 0421.1, 1150.21

Geo. 101019-2 PZ 22-14058



TELEPHONE: (442) 265-1800 FAX: (442) 265-1799

October 14, 2022

RECEIVED

Jim Minnick
Planning & Development Services Director
801 Main Street
El Centro, CA 92243

OCT 14 2022

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

SUBJECT:

Conditional Use Permit 22 0021 – Jesus & Liliana Aguirre

Dear Mr. Minnick,

The Imperial County Air Pollution Control District ("Air District") appreciates the opportunity to review and comment on Conditional Use Permit ("CUP") 22-0021 ("Project"). The Project proposes the construction and operation of an LPG Bulk Plant, storage and distribution of LPG gas for commercial and business purposes, and is located at 1338 Glendale Ave, Thermal CA 92274 also identified as Assessor's Parcel Number 014-031-005.

Reviewing the project information provided, the project would not require an Air District permit at this time. However, the Air District requests to be informed of any changes or modifications to the project equipment or processes to verify any additional requirements that may be triggered by the change.

The Air District would also like to remind the applicant that the project must comply with all Air District rules, and would emphasize Regulation VIII. Regulation VIII is a collection of rules designed to maintain fugitive dust emissions below 20% opacity.

For your convenience, the Air District's rules and regulations are available via the web at <a href="https://apcd.imperialcounty.org/rules-and-regulations/">https://apcd.imperialcounty.org/rules-and-regulations/</a>. Please feel free to call should you have questions at (442) 265-1800.

Respectfully.

**Environmental Coordinator I** 

APC Division Manager

#### **Gerardo Quero**

From: Allison Galindo

Sent: Tuesday, 18 October, 2022 4:36 PM

To: Gerardo Quero

**Subject:** FW: CUP22-0021 Request for Comments

FYI

# Allison Galindo

Office Assistant III Imperial County Planning & Development Services 801 Main St. El Centro, CA 92243 (442)265-1736



RECEIVED

OCT 18 2027

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

From: Krug, Robert@DTSC <Robert.Krug@dtsc.ca.gov>

Sent: Tuesday, October 18, 2022 4:25 PM

**To:** Allison Galindo <allisongalindo@co.imperial.ca.us> **Subject:** RE: CUP22-0021 Request for Comments

# CAUTION: This email originated outside our organization; please use caution.

The facility must conform to all regulatory design and system operational requirements, and must notify the DTSC Imperial CUPA and County Environmental Health upon start of operations. They will be in the Hazardous Materials program and will need to create a CERS account prior to operation. Any questions, call the CUPA at 760-352-0381. Bob

Robert Krug
Supervisor / Senior Environmental Scientist
Department of Toxic Substances Control
Imperial CUPA
627 Wake Avenue
El Centro, CA 92243
Robert.Krug@dtsc.ca.gov
(760) 336-8919 Work

(760) 336-8919 Work (760) 457-7376 Cell

From: Allison Galindo <allisongalindo@co.imperial.ca.us>

Sent: Tuesday, October 18, 2022 1:50 PM

To: Krug, Robert@DTSC < Robert.Krug@dtsc.ca.gov >; Andrew Loper < AndrewLoper@co.imperial.ca.us >; Robert Malek

< <u>RobertMalek@co.imperial.ca.us</u>>; Alfredo Estrada Jr < <u>AlfredoEstradaJr@co.imperial.ca.us</u>>; Jorge Perez

<<u>JorgePerez@co.imperial.ca.us</u>>; Jeff Lamoure <<u>JeffLamoure@co.imperial.ca.us</u>>; Alphonso Andrade

< Alphonso Andrade@co.imperial.ca.us >; Guillermo Mendoza < Guillermo Mendoza@co.imperial.ca.us >; John Gay

<JohnGay@co.imperial.ca.us>

Cc: Gerardo Quero <gerardoquero@co.imperial.ca.us>; Almee Trujillo <aimeetrujillo@co.imperial.ca.us>; Allison Galindo

<allisongalindo@co.imperial.ca.us>; John Robb < JohnRobb@co.imperial.ca.us>; Laryssa Alvarado

<a href="mailto:saalvarado@co.imperial.ca.us">s Maria Scoville < mariascoville@co.imperial.ca.us</a>; Melina Rizo

<melinarizo@co.imperial.ca.us>; Rosa Soto <RosaSoto@co.imperial.ca.us>

Subject: FW: CUP22-0021 Request for Comments

#### Good afternoon,

Please see attached Request for Comments packet for CUP22-0021/ APN 014-031-005-000 located at 1338 Glendale Ave, Thermal CA 92274.

Comments were due by October 17<sup>th</sup> at 5:00PM. If you can please reply with any comments towards this project.

In an effort to increase the efficiency at which information is distributed and reduce paper usage, the Request for Comments packet is being sent to you via this email.

Should you have any questions, please feel free to contact Gerardo at (442) 265-1736, or submit your comment letters to ICPDScommentletters@co.imperial.ca.us.

Thank you,

# Allison Galindo

Office Assistant III Imperial County Planning & Development Services 801 Main St. El Centro, CA 92243 (442)265-1736



From: Aimee Trujillo <aimeetrujillo@co.imperial.ca.us>

Sent: Friday, September 30, 2022 3:46 PM

To: Carlos Ortiz < Carlos Ortiz@co.imperial.ca.us >; Sandra Mendivil < Sandra Mendivil@co.imperial.ca.us >; Jolene Dessert

<<u>JoleneDessert@co.imperial.ca.us</u>>; Margo Sanchez <<u>MargoSanchez@co.imperial.ca.us</u>>; Ana L Gomez

<analgomez@co.imperial.ca.us>; Belen Leon <BelenLeon@co.imperial.ca.us>; Monica Soucier

< MonicaSoucier@co.imperial.ca.us >; Ryan Kelley < RyanKelley@co.imperial.ca.us >; Miguel Figueroa

<miguelfigueroa@co.imperial.ca.us>; Rosa Lopez <RosaLopez@co.imperial.ca.us>; Vanessa Ramirez

<a href="mailto:sub-right: 2006-866;">VanessaRamirez@co.imperial.ca.us</a>; Alphonso Andrade

<a href="mailto:salinas"><a href="mailto:AlphonsoAndrade@co.imperial.ca.us"><a href="mailto:salinas"><a href="mailto:sali

< <<u>MarioSalinas@co.imperial.ca.us</u>>; Janette Angulo <<u>JanetteAngulo@co.imperial.ca.us</u>>; Alfredo Estrada Jr

< Alfredo Estrada Jr@co.imperial.ca.us >; Robert Malek < Robert Malek@co.imperial.ca.us >; Andrew Loper

< AndrewLoper@co.imperial.ca.us>; Guillermo Mendoza < Guillermo Mendoza @co.imperial.ca.us>; John Gay

<<u>JohnGay@co.imperial.ca.us</u>>; Ray Loera - Sheriff <<u>rloera@icso.org</u>>; Manuel Deleon <mdeleon@icso.org>; Vargas,

Donald A < DVargas@IID.com >; sara.Lockett@parks.ca.gov; jbarrett@cvwd.org; incoming@cvwd.org; Mitch Mansfield

<mmansfield@saltoncsd.ca.gov>; info@saltonsea.com; roger.sanchez-rangel@dot.ca.gov; robert.krug@dtsc.ca.gov;

hhaines@augustinetribe.com; info@augustinetribe-nsn.gov; Marcus Cuero <marcuscuero@campo-nsn.gov>;

<u>imesa@campo-nsn.gov</u>; Quechan Historic Preservation Officer < historic preservation@quechantribe.com >; 'Jordan D.

Joaquin' < tribalsecretary@quechantribe.com >; thomas.tortez@torresmartinez-nsn.gov;

joseph.mirelez@torresmartinez-nsn.gov; jfreeman@semprautilities.com; byronfrontier@yahoo.com

#### **Gerardo Quero**

From:

Jorge Perez

Sent:

Wednesday, 19 October, 2022 2:32 PM

To:

Allison Galindo; Robert Krug; Andrew Loper; Robert Malek; Alfredo Estrada Jr; Jeff

Lamoure; Alphonso Andrade; Guillermo Mendoza; John Gay

Cc:

Gerardo Quero; Aimee Trujillo; John Robb; Laryssa Alvarado; Maria Scoville; Melina Rizo;

Rosa Soto

Subject:

RE: CUP22-0021 Request for Comments

Hi Allison,

Our agency has no comments. However, please have the applicant reach out to DTSC/CUPA to ensure they are meeting their standards, if any.

Thank you,

Jorge A. Perez

Imperial County Division of Environmental Health

P: 442-265-1888 - C: 760-427-1190

RECEIVED

OCT 19 2022

From: Allison Galindo <allisongalindo@co.imperial.ca.us>

Sent: Tuesday, October 18, 2022 1:50 PM

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

To: Robert Krug <Robert.Krug@dtsc.ca.gov>; Andrew Loper <AndrewLoper@co.imperial.ca.us>; Robert Malek

<RobertMalek@co.imperial.ca.us>; Alfredo Estrada Jr <AlfredoEstradaJr@co.imperial.ca.us>; Jorge Perez

<JorgePerez@co.imperial.ca.us>; Jeff Lamoure <JeffLamoure@co.imperial.ca.us>; Alphonso Andrade

<AlphonsoAndrade@co.imperial.ca.us>; Guillermo Mendoza <GuillermoMendoza@co.imperial.ca.us>; John Gay

<JohnGay@co.imperial.ca.us>

Cc: Gerardo Quero <gerardoquero@co.imperial.ca.us>; Aimee Trujillo <aimeetrujillo@co.imperial.ca.us>; Allison Galindo

<allisongalindo@co.imperial.ca.us>; John Robb < JohnRobb@co.imperial.ca.us>; Laryssa Alvarado

<a href="mailto:square;"><laryssaalvarado@co.imperial.ca.us>;</a>; Maria Scoville <a href="mailto:square;"><a href="mailto:square;">maria Scoville@co.imperial.ca.us>;</a>; Melina Rizo

<melinarizo@co.imperial.ca.us>; Rosa Soto <RosaSoto@co.imperial.ca.us>

Subject: FW: CUP22-0021 Request for Comments

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Should you have any questions, please feel free to contact Gerardo at (442) 265-1736, or submit your comment letters to ICPDScommentletters@co.imperial.ca.us.

Thank you,

#### **ADMINISTRATION / TRAINING**

1078 Dogwood Road Heber, CA 92249

#### Administration

Phone: (442) 265-6000 Fax: (760) 482-2427

Training

Phone: (442) 265-6011



#### **OPERATIONS/PREVENTION**

2514 La Brucherie Road Imperial, CA 92251

#### Operations

Phone: (442) 265-3000 Fax: (760) 355-1482

#### Prevention

Phone: (442) 265-3020

November 3, 2022

RE: Condition Use Permit 22-0021
Jesus and Liliana Aguirre, Bulk Propane Storage
1338 Glendale Ave, Thermal, CA 92274

RECEIVED

NOV 03 ZUZZ

IMPERIAL COUNTY

Imperial County Fire Department would like to thank you for the opportunity to review and comment on CUP 22-0021 for Jesus and Liliana Aguirre Bulk Propane Storage Facility located at 1338 Glendale Ave, Thermal, CA 92274

Imperial County Fire Department has the following comments and/or requirements.

- An approved fire hydrant installed within 300 feet of the facility. Currently the closet fire hydrant is 800 feet away. This requirement will help with a reliable water source for tank cooling within 10 minutes of a fire emergency as noted in the facility fire safety analysis\*.
- Leak mitigation and Hazmat equipment shall be kept on site in approved location determined by Imperial County Fire Department official(s). Equipment needed shall be determined by Imperial County Fire Department official(s).
- Fire department access roads shall be a width of a least 20 feet and all weather surface capable of supporting fire apparatus. Fire department access roads will be provided with approved turn around approved by Imperial County Fire Department. Gates will be in accordance with the current adapted fire code and the facility will maintain a Knox Box/lock for access on site.
- Provide an adequate number of fire extinguishers onsite, as determined by Imperial County Fire Department official(s)
- All storage and handling of flammable and combustible gas shall be in accordance with the California Fire Code and all federal, state, and local regulations, codes, and ordinances.
- Compliance with all required sections of the fire code.

An Emergency Response Plan shall be provided to Imperial County Fire Department/OES for covering possible emergencies (Examples: fire, leak and/or spill, earthquake, other emergencies). There shall be at least one employee "on-call" at all times available to respond to emergencies at the facility to coordinate with emergency responders and provide information about the site if needed. The emergency contact coordinator shall be thoroughly familiar with the facility, the emergency response plan and federal, state, and local regulations on hazard material storage and release.

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

#### **ADMINISTRATION / TRAINING**

1078 Dogwood Road Heber, CA 92249

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Phone: (442) 265-6000 Fax: (760) 482-2427

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2514 La Brucherie Road Imperial, CA 92251

#### Operations

Phone: (442) 265-3000 Fax: (760) 355-1482

#### Prevention

Phone: (442) 265-3020

The project shall be in compliance at all times with requirements in the California Fire Code and local ordinances and requirements. Imperial County Fire Department shall conduct annual fire and life safety inspections

Imperial County Fire Department reserves the right to comment and request additional requirements pertaining to this project regarding fire and life safety measures, California Building and Fire Code, and National Fire Protection Association standards at a later time as we see necessary.

\*An Fire Safety Analysis report was created and provided to Imperial County Fire Department for the project. Requirements noted were based on findings of the Fire Safety Analysis report and can be provided for review if needed.

If you have any questions, please contact the Imperial County Fire Prevention Bureau at 442-265-3020 or 442-265-3021.

Sincerely

Andrew Loper

Lieutenant/Fire Prevention Specialist Imperial County Fire Department

Fire Prevention Bureau

Robert Malek Deputy Chief Imperial County Fire Department Fire Prevention Bureau

# Fire Safety Analysis Manual for

# **LP-Gas Storage Facilities**

Based on the 2017 Edition of NFPA 58 Liquefied Petroleum Gas Code







Developed by the National Fire Protection Association and the

National Propane Gas Association

Funded by a Grant from the Propane Education & Research Council



# Fire Safety Analysis Manual For LP-Gas Storage Facilities

Based on the 2017 Edition of NFPA 58 Liquefied Petroleum Gas Code

The official position of the NFPA on all aspects regarding propane storage facility safety is in NFPA 58, the *Liquefied Petroleum Gas Code*. This manual is not intended to replace NFPA 58.

The Propane Education & Research Council (PERC) is a non-profit 501(c)6 trade organization authorized by the Propane Education and Research Act of 1996 (PERA), Public Law 104-284. PERC was created "to enhance consumer and employee safety and training, to provide for research and development of clean and efficient propane utilization equipment, and to inform and educate the public about safety and other issues associated with the use of propane."

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# Origin and Development of the Fire Safety Analysis Manual

The requirement for a Fire Safety Analysis (FSA) was introduced in the 1976 edition of NFPA 58, along with the requirement for emergency shutoff valves at locations where hoses and swivel type piping were used (for connection to cargo tank vehicles and rail cars). A Fire Safety Analysis was required for new propane storage plants with capacities of more than 4,000 gallons located in "heavily populated or congested areas".

This requirement was basically unchanged until the 2001 edition of NFPA 58, where the FSA was required for all propane storage plants with capacities of more than 4,000 gallons, with a three year period for existing facilities to be brought into compliance. As the majority of plants requiring a FSA did not have one in 2001, the need for guidance on how to conduct the FSA became apparent. Prior to 2001, the FSA was usually conducted by an independent consultant with knowledge of propane and fire safety. The concept of a consistent methodology was identified by a propane marketer in New England, Jim Hurley of Eastern Propane. The first two editions of the Manual were dedicated to Jim in recognition of his vision.

The recommendation resulted in NFPA working with NPGA to submit a proposal to PERC to develop a FSA manual to assist marketers in complying with the FSA requirement. When the project was approved, NPGA established an advisory committee and worked with NFPA to develop the manual.

Since the 2001 edition of the manual, it has been updated thrice to retain correct

# numbers Fire Safety Analysis Manual for LP-Gas Storage Facilities

Based on the 2017 Edition of NFPA 58 Liquefied Petroleum Gas Code







# Developed by the National Fire Protection Association and the National Propane Gas Association Funded by a Grant from the Propane Education & Research Council



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Since the 2001 edition of the manual, it has been updated thrice to retain correct numbers of the paragraphs referenced in NFPA 58, as they are sometimes revised and renumbered. No technically substantive changes have been made to the manual since the first edition was published.

The models used in the Fire Safety Analysis (FSA) Manual to determine the distances to hazards (presented in Table B-1 of the FSA Manual) are based on published models in the literature. These models have been published in government reports, journal articles<sup>1,2</sup>, EPA-suggested procedures<sup>3</sup> and engineering monographs and books. The models used are considered conservative and have been simplified for the purposes of the FSA Manual.

A general reference on hazard distance assessment models is: Lees, F.P. (Editor), "Loss Prevention in the Process Industries," 2<sup>nd</sup> Edition, Vol 1, 2 & 3, Butterworth Heinemann Publishers, Oxford, England, 1996.

Raj, P.K., "Exposure of a liquefied gas container to an external fire," Journal of Hazardous Materials, v 122, Issues 1-2, p 37-49, June 2005.

US EPA, "*Technical Guidance for Hazard Analysis*," Emergency Planning for Extremely Hazardous Substances, EPA/FEMA/DOT, December 1987.

#### Acknowledgments

This fifth edition of the Fire Safety Analysis (FSA) Manual, based on the 2017 edition of NFPA 58, is a continuation of the effort to fulfill a need for an easily used and simple aid for the members of propane industry to fulfill their obligations under NFPA 58 (2001, 2004, 2008, 2011 and 2017 editions) which require developing a written FSA. The project was funded by the Propane Education & Research Council through the National Propane Gas Association (NPGA). The National Fire Protection Association (NFPA) was the principal contractor for the first edition of the manual. Technology & Management Systems, Inc. (TMS) developed the technical analyses and several chapters of the first edition of the manual, as a subcontractor to NFPA.

Mr. Theodore C. Lemoff, Principal Gases Engineer, was the principal investigator at NFPA. Dr. Phani K. Raj was the principal investigator and analyst at TMS. Mr. Bruce Swiecicki, P.E., Senior Technical Advisor at NPGA, served as a staff technical reviewer.

In preparation for the first edition, NPGA assembled an Advisory Committee consisting of representatives from the propane industry, a Fire Department of a major city in the US and a Fire Protection Engineer. The Committee provided technical inputs and guidance to the project team on industry safety practices, types of information that an authority having jurisdiction and emergency responders would want to see in an FSA, an insight into the levels of understanding of various issues related to FSA in the industry, etc. The Advisory Committee set not only the direction of the project but made policy decisions related to the scope of the FSA manual. Except for the contractors, every member of the Advisory Committee had a vote and many decisions were made on the basis of a Committee vote. The Advisory Committee consisted of the following (voting) members.

1	Michael Merrill (Chairman)	Suburban Propane LP	Whippany, NJ
2	Mr. Greg Benton	Georgia Gas Distributors	Atlanta, GA
3	Mr. Billy Cox	O'Nealgas Inc.	Choudrant, LA
4	Mr. James Howe	Howe Engineers, Inc.	West Falmouth, MA
5	Mr. Jerry Lucas	Heritage Propane Partners, LP	Sallisaw, OK
6	Mr. Rob Scott	Scott & Associates	Kingsburg, CA
7	Mr. Cliff Slisz	Ferrellgas	Liberty, MO
8	Mr. Scott Stookey	City of Phoenix Fire Department	Phoenix, AZ
9	Mr. Ron Stover	Mutual Liquid Gas & Equipment	Gardena, CA
10	Mr. Robert Wallace	Dowdle Butane Gas Co Inc	Maryville, TN
11	Mr. Brent Wolcott	Ag Valley Coop	Edison, NE

Mr. Theodore Lemoff and Dr. Phani Raj participated in the deliberations of the meetings of the Advisory Committee as non-voting members.

#### **About the Authors**

#### Phani K. Raj, Ph.D.

Dr. Raj is the President of Technology & Management Systems, Inc. (TMS). He holds S.M. and Ph.D. degrees in Mechanical Engineering as well as an MBA degree.

He has over 30 years professional experience in conducting safety research and assessing risks in the storage, transportation, handling and utilization of hazardous materials, including energy fluids. His research has included the development of mathematical models to describe the accidental release behavior of chemicals and flammable materials. In addition, he has developed easy to follow safety guideline documents and hazard assessment manuals for a number of clients including the Federal Agencies and industrial clients.

Dr. Raj developed a number of models for the "Chemical Hazard Response Information System" (CHRIS), which the U.S. Coast Guard and the National Response Center use for assisting in case of hazardous material emergencies. He is the author of CHRIS Manual III "Hazard Assessment Handbook."

Since 1996 he has been a member of the NFPA's Technical Committee on Liquefied Petroleum Gases which writes NFPA 58, *Liquefied Petroleum Gas Code*. He was a member of the Committee Transportation of Hazardous Materials (of the National Research Council), and emeritus member of the Editorial Board of the Journal of Hazardous Materials. He has held the post of visiting lecturer at MIT and taught, in the Chemical Engineering Department, a graduate level course. He is the principal author of over 100 technical reports and over 40 technical papers.

#### Theodore C. Lemoff, PE

Mr. Lemoff is retired from the National Fire Protection Association (NFPA). While at NFPA, he served as the Principal Gases Engineer. He holds a Bachelor of Engineering degree in Chemical Engineering and is a registered professional engineer in Massachusetts.

He has over 40 years experience in the fire safety and the chemical industry, including 25 years at NFPA working in the flammable gases area. He served as the staff liaison and secretary to the NFPA Technical Committee on Liquefied Petroleum Gases, responsible for NFPA 58, and for other NFPA codes and standards on flammable gases.

Mr. Lemoff is a member of the American Institute of Chemical Engineers, the Society of Fire Protection Engineers, the Society of Gas Engineers, and the American Society of Plumbing Engineers.

# **Table of Contents**

		Page #
Ori	gin and Development of the Fire Safety Analysis Manual	(ii)
Ack	nowledgments	(iv)
Abo	out the authors	(v)
CH	APTER 1 Introduction	
1.1	Background	1-1
1.2	Scope of the Manual	1-2
1.3	Need for a FSA Manual	1-3
1.4	LP-Gas Safety Record and Risks	1-4
1.5	Organization of the FSA Manual	1-5
CH	APTER 2 LP-Gas Storage Container Safety Features	
2.1	A Historical Perspective	2-1
2.2	Current LP-Gas Storage Container Safety Features	2-3
CH	APTER 3 Principal Elements of Fire Safety Analysis	
3.1	Important Steps in Conducting the Analysis	3-1
3.2	Completing the FSA	3-2
CH	APTER 4 Facility Information	
4.1	Initial Data for the LP-Gas Facility	4-1
4.2	Facility Storage Capacity and Other Details	4-1
4.3	Additional Facility Information	4-2
CH	APTER 5 Analysis of Product Control Measures in	
	Containers and Transfer Piping	
5.1	Product Control Measures in Containers	5-1
	<ul> <li>5.1.1 Individual Containers of Water Capacity less than or equal to 2,000 gallons</li> <li>5.1.2 Individual Containers greater than 2,000 gallons water capacity and less</li> </ul>	5-2
	than or equal to 4,000 gallons water capacity	5-8
	A) Containers used in Residential and Commercial Facilities	5-8
	B) Containers used in Bulk and Industrial Facilities	5-11
	5.13 Individual Containers of Water Capacity greater than 4,000 gallons used in Bulk Plants and Industrial Plants	5-17
5.2	Product Control Measures in Transfer Piping	5-23
- <b>.</b> _	521 Manifolded and Remotely Filled Containers	5-23
5.3	Alternate Provisions for the Installation of ASME Containers	5-26
5.5	53.1 ASME Container Appurtenances and Redundant Fail-Safe	5-26
	Product Control Systems	5.00
	532 Low Emission Transfer Equipment	5-28

	CHAPTI	ER 6 Analysis of Local Conditions of Hazard	
6.1		Protection Measures	6-1
6.2	Ignition Sources and Control		
6.3	Separatio	n Distances	6-3
		paration Distances between Container and Important Buildings, her Properties and Transfer Points	6-3
	6.3.2 Se <sub>1</sub>	paration Distances between Transfer Points and other Exposures	6-4
6.4	Special P		6-5
6.5	Vehicular	Protection	6-6
CH	APTER 7	Exposure to and from Other Properties,	
	_	Population Density	
7.1		to off-site properties and persons from in-plant propane releases	7-1
7.2	Exposure	to Propane Plants From External Events	7-3
CH	APTER 8	<b>Evaluation of Fire Services and Water Supply</b>	
		Requirements	
8.1	Details of	the Fire Service	8-1
8.2	Water Ne	eds and Availability	8-3
CH	APTER 9	<b>Evaluation Summary for a Proposed New LP-Gas Facility</b>	
	APTER 10		
		e Example # 1	10-2
10.2	Illustrativ	e Example # 2	10-21
10.3	Illustrativ	e Example # 3	10-39
10.4	Illustrativ	e Example # 4	10-57
Glos	ssary and A	Acronyms	G-1
App	endix A:	Fill-In Forms	A-1
App	endix B:	Results of Hazard Distance Calculations for Different LPG Release Scenarios	B-1

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# **List of Forms**

		Page #
Form 4.1	Initial Data on the LP-Gas Facility	4-1
Form 4.2	Facility Storage Capacity	4-2
Form 4.3	Additional Information on the LP-Gas Facility	4-3
Form 5.1	Compliance with Code Requirements for Appurtenances on Containers of 2,000 Gallons Water Capacity or Less	5-3
Form 5.2	Compliance with Code Requirements for Appurtenances on Containers of Water Capacity 2,001 Gallons Through 4,000 Gallons Used in Residences and Commercial Facilities	5-10
Form 5.3	Compliance with Code Requirements for Appurtenances on Containers of Water Capacity 2,001 Gallons Through 4,000 Gallons Used in Bulk Plants and Industrial Plants	5-12
Form 5.4	Compliance with Code Requirements for Appurtenances on Containers of Greater than 4,000 Gallons Water Capacity Used in Bulk Plants and Industrial Plants	5-18
Form 5.5	Requirements for Transfer Lines of 1½ inch Diameter or Larger, Liquid-into-Containers	5-23
Form 5.6	Requirements for Transfer Lines of 1½ inch Diameter or Larger, Liquid Withdrawal from Containers	5-24
Form 5.7	Requirements for Vapor Transfer Lines 1 <sup>1</sup> / <sub>4</sub> -inch Diameter or Larger	5-25
Form 5.8	Evaluation of Redundant Fail-Safe Design	5-26
Form 5.9	Evaluation of Low Emission Transfer Equipment	5-28
Form 6.1	Evaluation of Physical Protection and Other Measures	6-1
Form 6.2	Ignition Source Control Assessment	6-2
Form 6.3	Separation Distances between Containers and Buildings, Property Line, etc.	6-3
Form 6.4	Separation Distances between Points of Transfer and Other Exposures	6-4
Form 6.5	Special Protection Measures, Passive Systems	6-5
Form 6.6	Special Protection Measures, Active Systems	6-6
Form 6.7	Protection Against Vehicular Impact	6-6
Form 7.1	Types of Occupancies Near or Surrounding the LP-Gas Plant	7-3
Form 7.2	Exposure to LP-Gas Plant from External Hazards	7-4
Form 8.1	Data on the Responding Fire Department	8-2
Form 8.2	Response Time Data for the Fire Departments	8-4
Form 8.3	Water Flow Rate and Total Water Volume Required to Cool Containers Exposed to a Fire	8-5
Form 8.4	Evaluation of Water Availability in or Near the LP-Gas Facility	8-7
Form 9.1	Analysis Summary on Product Control and Local Conditions of Hazard	9-1
Form 9.2	Analysis Summary on Exposure From and to the LP-Gas Facility	9-2
Form 9.3	Analysis Summary on Fire Department Evaluations	9-3

Form 9.4	Redundant and Fail-Safe Design for Containers	9-5
Form 9.5	Low Emission Transfer Equipment	9-6
Form 9.6	Special Protection Measures –Passive Systems	9-7
Form 9.7	Special Protection Measures – Active Systems	9-7
	List of Tables	
	List of Tubics	
Table 3.1	Description of the Various Steps in Performing the FSA	3-3
Table 5.1	Container Size Dependant Evaluations	5-1
Table 7.1	Distances to Various Types of Propane Hazards Under	7-2
	Different Release Models	
Table 9.1	Suggested Alternative Methods for Industrial and Bulk Plants That Do	9-8
	Not Pose a Hazard But Lack a Water Supply	
Table B-1	LPG Release Cases for Hazard Assessment	B-2
Table B-2	Distances to LFL Concentrations and Hazard Areas	B-4
Table B-3	Various Parameters and their Values Used in the Cases	B-6
Table B-4	Thermodynamic Properties of Propane	B-7
Table B-5	Calculation of the Mass Fraction of LPG and n-Butane	B-9

# **List of Figures**

		Page #
Figure 5-1	Schematic Representation of the NFPA 58 Requirements for Product Control Appurtenances on Containers of Water Capacity Less Than or Equal to 2,000 Gallons, With Different Service Configurations	5-4
Figu	re 5-1A: Single Vapor Service Line in a Manifolded Configuration	5-4
	re 5-1B: Regulator in the Vapor Service Line	5-5
Figu	re 5-1C: Container with both Liquid and Vapor Service, Regulator in the Vapor Service Line	5-6
Figu	re 5-1D: Container Feeding Liquid to a Vaporizer	5-7
_	re 5-1E: Vertical Container for Liquid Service	5-8
Figure 5-2	Vapor Inlet Appurtenances on Containers of Water Capacity Greater Than 2,000 Gallons	5-13
Figure 5-3	Vapor Outlet Appurtenances on Containers of Water Capacity Greater Than 2,000 Gallons	5-14
Figure 5-4	Liquid Inlet Valves on Containers 2,001 through 4,000 Gallons Water Capacity	5-15
Figure 5-5	Liquid Outlet Valves on Containers 2,001 through 4,000 Gallons Water Capacity	5-16
Figure 5-6A	Liquid Inlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in New Bulk Plants and Industrial Plants	5-19
Figure 5-6B	· · · · · · · · · · · · · · · · · · ·	5-20
Figure 5-7A	Liquid Outlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in New Bulk Plants and Industrial Plants	5-21
Figure 5-7B		5-22

# **CHAPTER 1**

# Introduction

# 1.1 Background

The Fire Safety Analysis (FSA) is a self-conducted audit of the safety features of a propane installation and an assessment of the means to minimize the potential for inadvertent propane releases from storage containers and during transfer operations. The assessment also includes an evaluation of the capabilities of local emergency response agencies as well as an analysis of potentially hazardous exposures from the installation to the neighborhood and from the surroundings to the LP-Gas facility.

Since 1976, NFPA 58, Liquefied Petroleum Gas Code (hereinafter referred to as the "code" or "NFPA 58") has required that a facility operator or owner conduct a FSA for propane facilities having ASME containers of aggregate storage greater than 4,000 gallons water capacity. The FSA requirement was changed in the 2001 edition to require a written FSA. The requirements for fire protection are indicated in the 2017 edition of NFPA 58 in §6.27, which addresses fire protection requirements for industrial plants, bulk plants and dispensing stations. Specifically §6.27.2 ("Planning") and §6.27.3 ("Protection of ASME Containers") require, in part, the following:

- 6.27.2.1 The planning for the response to incidents including the inadvertent release of LP-Gas, fire, or security breach shall be coordinated with local emergency response agencies.
- **6.27.2.2** Planning shall include consideration of the safety of emergency personnel, workers, and the public.
- **6.27.3.1** Fire protection shall be provided for installations with an aggregate water capacity of more than 4000 gal (15.2 m³) and for ASME containers on roofs.
- 6.27.3.2 The modes of fire protection shall be specified in a written fire safety analysis for new installations, for existing installations that have an aggregate water capacity of more than 4000 gallons (15.2 m³) and for ASME containers on roofs. Existing installations shall comply with this requirement within 2 years of the effective date of this code.
- **6.27.3.3** The fire safety analysis shall be submitted by the owner, operator, or their designee to the authority having jurisdiction and local emergency responders.
- **6.27.3.4** The fire safety analysis shall be updated when the storage capacity or transfer system is modified.

The FSA and required assessment of the installation provides several important benefits:

1) A structured assessment by which each facility can be evaluated for conformity of installed equipment with code requirements.

- 2) A means to evaluate the capability of systems and equipment installed to control and contain potential LP-Gas releases during day-to-day operations.
- 3) An approach to evaluate the informational needs of the facility, based on factors such as the type and frequency of transfer operations, size of the storage containers, location of the facility with respect to other buildings and the existing procedures and systems in place.
- 4) A means to describe product control and fire protection features which exceed the comprehensive requirements of NPFA 58<sup>1</sup>.
- 5) A tool for facilitating a cooperative and effective dialogue with local emergency response agencies and authorities having jurisdiction.

# 1.2 Scope of the Manual

The manual addresses a number of subjects, including:

- (1) A review of the product control measures required in the NFPA 58, "Liquefied Petroleum Gas Code"
- (2) Local conditions of hazards within the facility site
- (3) Exposures to and from other properties
- (4) Effectiveness of local fire departments
- (5) Effective control of leakage, fire and exposure
- (6) Illustrative examples using four different sizes of typical LP-Gas facilities

This FSA manual is intended for use by propane plant owners or operators, consultants, authorities having jurisdiction (AHJs) and emergency response personnel. The manual addresses the process by which a FSA can be conducted for a LP-Gas facility containing one or more stationary ASME containers.

The FSA manual is designed to provide a guide for identifying the requirements in NFPA 58 and determining compliance with them. Section 6.27.3.5 of NFPA 58 provides that:

The fire safety analysis shall be an evaluation of the total product control system, such as the emergency shutoff and internal valves equipped for remote closure and automatic shutoff using thermal (fire) actuation, pull away protection where installed, and the optional requirements of Section 6.28.

The philosophy of NFPA 58 is to minimize fires by minimizing the accidental release of propane if an incident should occur. Or put in simple terms, "no fuel, and no fire."

The manual does not address the following:

All reference, henceforth, to the "code" in this document should be construed as referring to NFPA 58, 2017 edition.

- 1. Marine terminals, refrigerated LP-Gas storage and the transportation of LP-gas by either rail tank cars or by cargo tank trucks. Marine terminals are governed by the OSHA Process Safety Management regulations and the US EPA Risk Management Plan regulations; refrigerated storage of LP-gas is a high-volume operation requiring special considerations; and, the transportation of LP-gas is addressed by Title 49 of the Code of Federal Regulations, *Transportation*.
- Storage of LP-Gas in salt domes and caverns.
- 3. Installations of ASME LP-gas containers on roofs of buildings. This type of installation, for which a fire safety analysis is required, is excluded from the scope of this manual primarily because of the rarity of such installations in the United States.
- 4. Cylinder filling operations at a dispensing facility, unless the storage threshold for LP-Gas has been exceeded, requiring an FSA to be prepared.
- 5. The use of facility employees performing as a "fire brigade."

The above facilities may be required to comply with other safety analysis requirements.

# 1.3 Need for a FSA Manual

Neither NFPA 58 nor the "Liquefied Petroleum Gas Code Handbook" provide detailed guidance on how to prepare or develop a written FSA. Since each industrial plant, bulk plant, or dispensing stationpresents unique physical and operational characteristics, the fire safety analysis is a tool used to assess the level of fire safety performance that a specific industrial plant, bulk plant or dispensing station can be expected to provide. This FSA will also provide essential information on the facility and its operation to the local authority having jurisdiction (AHJ) and local emergency response agency.

An informal survey was taken of AHJ's on the fire safety analyses used for existing and new plants in their jurisdictions (conducted by the author) at the time the first edition of this manual was being prepared. It indicated that there was no uniformity either in content, the details of information, or final assessment of the facility in the FSAs submitted. They ranged from a single page submission for a medium size bulk plant to very detailed assessment including risk assessment and management plan for a 30,000 gallon bulk storage facility. Without a guidance manual, potential confusion would almost certainly occur as each AHJ would be required to establish an individual set of criteria that would meet the FSA in their area. Thus, the need in the LP-Gas industry for assistance with the following tasks was clearly established.

- 1) Providing a FSA template that allows for consideration of different size installations
- 2) Establishing a uniform approach and defining common elements
- 3) Developing simplified checklists and an example-based methodology for completing the analysis
- 4) Utilizing technically-based guidance and support

The intent of this FSA manual is to provide an easy-to-use procedure for LP-gas facility owners or operators who are most familiar with the equipment technology and system operations and therefore qualified to complete the document. Knowledge of fire science and engineering

principles is not required for this document to be useable by an owner, operator or an AHJ, because those principles have already been factored into the assessment criteria contained within the FSA.

By utilizing the expertise of industry, engineering and fire service representatives in the development of the material to follow, this manual provides a comprehensive, uniform, objective approach that was designed to provide for the uniform and objective application of FSA requirements by the AHJs. Further, the joint input of the Propane Education & Research Council (PERC), National Propane Gas Association (NPGA), and the National Fire Protection Association (NFPA) provides additional assurance of the manual's depth, credibility and broadbased consensus.

This FSA manual has been developed based on the requirements of NFPA 58, 2017 edition. Using this manual to perform a FSA at a facility constructed to meet the requirements of prior editions of NFPA 58 or other state-specific codes may produce conflicts between actual facility construction and the checklists in this manual. The code or standard in effect at the time of construction of the facility should be used as the source of requirements to perform the FSA. Checklist items contained within this manual can be revised to indicate the appropriate code items required at the time of facility construction.

#### 1.4 LP-Gas Safety Record and Risks

The LP-Gas industry has a long history of safe operations. With the requirement in the 1976 edition of NFPA 58 to retrofit LP-Gas plants with emergency shutoff valves (ESVs) in transfer lines, the safety of LP-Gas facilities was further improved.

The FSA provided in this manual, in addition to other safety programs currently enacted at any workplace, is intended to reduce or eliminate the risk of fatality or injury to both the plant employees and the public. In an effort to identify the level of risk a propane installation poses to the general public, as well as employees and emergency responders, the U.S. Department of Energy (DOE) instituted a study<sup>iii</sup> in 1981. Accident data from a variety of sources was analyzed, including: the US Department of Transportation hazardous material incident report database, reports of the National Transportation Safety Board, National Fire Protection Association, technical journals and other sources. Data analyzed for the period 1971 through 1979 addressed LP-Gas transportation and product releases from stationary storage facilities. The special focus of the study was the fatalities suffered by employees and the general public. The study concluded that a fatality to the general public as a direct result of an LPG transportation or storage incident involving the loss of product is very small and the risk (expressed in expected number of fatalities per year) is smaller than that from natural phenomena (lightning, tornadoes, objects falling from the sky, etc).

An analysis conducted by the National Fire Protection Association of LP-Gas fire damage and casualty data during the period between 1980 and 1999 also indicates that the LP-Gas storage facility operations in the US are very safe. The number of reported fires at LP-Gas bulk storage facilities remains small and has fallen since 1980, but substantial variation exists from year to year. During the five-year period from 1994 through 1998, an estimated 49 fires, on average,

were reported per year at LP-Gas bulk storage facilities. These fires caused an annual average of one civilian death, five civilian injuries and \$754,000 in direct property damage. In 1999, an estimated 58 reported fires on these properties caused four civilian injuries and \$722,000 in direct property damage. The 58 fires reported in 1999 accounted for .003% of all fires reported that year.

#### 1.5 Organization of the FSA Manual

The manual has been organized to address the requirements outlined in the 2017 edition of NFPA 58, Sections 6.27 and 6.28.

Chapter 2 discusses the requirements of the 2017 edition of NFPA 58 in regard to product control requirements, and their evolution. The philosophy and the advantages of product control systems are discussed. Also included are the various appurtenances used in a typical LP-Gas facility. More detailed information on the types of valves, their functions and example photographs of various appurtenances are provided in Appendix B. Chapter 3 provides an overview of the FSA process including its principal elements.

The input of data into the FSA procedure begins with Chapter 4. In Chapter 4, basic information about the LP-Gas facility is input into appropriate tables and a decision is made (based on the data provided) as to the extent of the analysis that should be completed. The assessment of conformity with code requirements of the product control requirements for containers and in transfer piping is performed in Chapter 5. To aid this assessment a series of sketches of possible configurations of container appurtenances (satisfying 2017 code requirements) are provided. Note that several section references have been changed from the published edition of the 2017 edition due to the acceptance of Tentative Interim Amendment 14-3, which is reprinted with permission in Appendix C. When necessary, the year when specific equipment was required by the code is also indicated on the sketches to facilitate application of the Manual to facilities constructed to the requirements in previous editions of NFPA 58. The analysis of the local conditions of hazard is presented in Chapter 6, followed by the assessment in Chapter 7 of the hazard exposure to off-site properties and persons. Also, the potential exposure to LP-Gas installations from off-site activities is covered in Chapter 7.

The evaluation of the capabilities of the local emergency responder (usually the fire department) and the availability of water to fight in-plant fires and exposures are presented in Chapter 8. Summary of evaluations and actions that may need to be initiated for proposed LP-Gas facilities are presented in Chapter 9. The use of this manual in preparing a written FSA for a LP-Gas facility is demonstrated with examples of four different generic cases. Several different sizes of facilities are considered.

A set of blank forms required to perform a FSA is provided in Appendix A. The results of calculating the hazard distances for a set of credible LP-gas release scenarios are provided in Appendix B. Also provided in Appendix B are the thermodynamic properties of propane and the values of other parameters used in calculating the hazard distances.

<sup>&</sup>lt;sup>i</sup>U. S. Code of Federal Regulations, Title 49, Transportation
<sup>ii</sup> Liquefied Petroleum Gas Handbook, Beach, 2017, NFPA, Quincy MA
<sup>iii</sup> LPG Land Transportation and Storage Safety, Department of Energy report No. DOE/EV/06020-TS 9/18/81"
<sup>iv</sup> Fires at LP-Gas Bulk Storage Plants Statistical Analysis, NFPA, 2003, Quincy, MA

#### **CHAPTER 2**

# **LP-Gas Storage Container Safety Features**

The fundamental premise on which the requirements for LP-Gas facility safety specified in several recent editions of NFPA 58 is based is the following:

If product release can be either controlled or eliminated, safety is effectively addressed.

A product release creates the potential for the occurrence of a fire. Therefore, the focus of both NFPA 58 and the Fire Safety Analysis Manual is on the need to design systems (incorporating product controls) to ensure, to the extent possible with current technology and procedures, the elimination of the accidental release of LP-gas from storage or during transfer operations.

#### 2.1 A Historical Perspective

In the late 1960's and the early 1970's there were a number of fires and BLEVEs (Boiling Liquid Expanding Vapor Explosions) of propane and other liquefied petroleum gases resulting from derailments of railcars carrying propane and other flammable liquefied gases. These incidents involved fire fighter fatalities and highlighted the need for safety improvements. As a result, the U. S. Department of Transportation (DOT) implemented new regulations for the tank cars used to transport propane and other liquefied flammable gases, and made them mandatory and retroactive in 1980. These improvements included:

- Head shields to reinforce the pressure vessel on the railcar
- "Shelf" couplers to reduce the potential for railcars to be uncoupled during a derailment
- Thermal protection to reduce the potential for the tank to experience a rise in temperature due to flame impingement

Since these improvements in rail car safety were made in the 1980's, there have been no fire fighter fatalities from any railroad tank car BLEVEs and the number of these incidents has been greatly reduced, to the authors' knowledge.

In 1973, product control requirements to prevent the uncontrolled release of LP-gas from storage containers consisted primarily of manually operated valves, backflow check valves and excess-flow check valves.

On July 3, 1973 a propane incident occurred in Kingman, Arizona involving a propane fire at a propane tank car unloading area in a propane bulk storage plant. Though the plant's equipment conformed to the requirements of NFPA 58 and other safety standards for flammable materials at that time, the incident resulted in the death of several fire fighters and one plant employee.

A direct result of this incident (and others that occurred at approximately the same time) was the addition of a new fire protection requirement in the 1976 edition of NFPA 58. The requirement stated that planning "for the effective measures for control of inadvertent LP-Gas release or fire" shall be done and coordinated with local emergency responders. In addition, the primary consideration of a fire safety analysis at that time was the use of water as a suppressing agent to control fires. The requirements today are very similar to those original requirements except in two areas.

- As of the 2001 edition, fire safety analyses are required to be written;
- The primary consideration in performing such an analysis has changed from the emphasis of using water for fire control to the emphasis of avoiding product release altogether using technology and training.

This modern approach takes advantage of the inherent safety present in a controlled environment such as a bulk plant, as well as the safety features of the most current product control hardware.

In early editions of NFPA 58, the primary consideration of water as the means to control a fire was based on the fact that at that time, there were few reliable ways to stop the flow of LP-gas after failures in the system and the need to apply water quickly to storage containers being impinged by flames was important.

Another significant change in the 1976 edition of NFPA 58 was the requirement for including an emergency shutoff valve (ESV) in the transfer lines used between stationary storage containers of over 4,000 gallons capacity and cargo tank vehicles. This revision was intended to prevent product release from storage containers in the event of a vehicle pulling away with its hoses still connected. All existing plants were required to comply with this requirement by the end of 1980. Since this retrofit program was completed, there has not been, to the knowledge of the authors, a pull-away accident involving an ESV installation that resulted in serious consequences.

The 1980's enjoyed a reduced number of propane incidents in the U. S., and the next major product control enhancement was the revision to introduce an optional requirement for internal tank valves in containers over 2,000 gallons in the 1992 edition of NFPA 58. These tank valve requirements included:

#### Vapor and Liquid Withdrawal Openings in Tanks

- 1. Positive shutoff valve in line with excess flow valve installed in the tank, or
- 2. Internal valve with integral excess flow shutoff capability

#### Vapor and Liquid Inlet Openings in Tanks

- 1. Positive shutoff valve in combination with either an excess flow valve or backflow check valve installed in the tank, or
- 2. Internal valve with integral excess flow valve, or
- 3. Internal valve with remote means of closure

These revisions were made to enhance the operational features of product control hardware. Internal valves are capable of being closed from a remote location (using a cable, pneumatic, or hydraulic device) and by thermal activation, which is accomplished using an element that melts when it is subjected to fairly moderate temperatures (in the 200°F - 250° F range).

The 2001 edition of NFPA 58 was further revised to require internal valves for liquid connections to containers over 4,000 gallons, with remote and thermal shutoff activation. This change was the result of the Committee desiring improved safety performance with this advanced hardware, due to the following incidents:

- Sanford, NC. A hose separation resulted in the loss of the contents of a transport vehicle (9700 gallons water capacity). The contents within the storage containers were also lost because of a failed check valve.
- Albert City, Iowa. An exposed liquid pipe installed in violation of the code between an 18,000 gallon water capacity storage container and a vaporizer was broken when a recreational vehicle accidentally drove over it. The leaking gas found a source of ignition and impinged on the container, resulting in a BLEVE.
- Truth or Consequences, NM. A small, parked truck rolled into a propane bulk storage plant, breaking plant piping. The resulting fire caused the failure of several cylinders.

These improvements in product control are considered critically important, and in addition to requiring them for all new installations after 2001, the requirements were made retroactive to all existing installations, allowing 10 years for the conversion. All existing containers over 4,000 gallons water capacity will be retrofit with an internal valve or similar protection on all liquid connections. Alternatively, the use of an emergency shutoff valve (ESV) as close to the container as practical is also allowed, in recognition that some containers cannot accommodate an internal valve without extensive modification. The ESV has the same remote and thermal activation closing features as an internal valve.

## 2.2 Current LP-Gas Storage Container Safety Features

As of the 2001 edition, NFPA 58 requirements for product release control include the provision for a number of different types of valves or appurtenances in the product storage containers, transfer piping network and at liquid transfer facility locations. Generally, code requirements for product control appurtenances on containers used in industrial plants and bulk plants, as well as dispensing stations, are more stringent than for residential and commercial use containers.

In the 2017 edition of NFPA 58, changes to the definitions of "Bulk Plant" and "Industrial Plant" clarified the intent of the NFPA Technical Committee on Liquefied Petroleum Gases by stating that each of those types of facilities utilize only containers greater than 4,000 gallons water capacity. Therefore, modifications were made to Chapter 5 of this manual to remove references to containers between 2,000 and 4,000 gallons water capacity. The manual does retain information on containers less than 4,000 gallons water capacity due to

the fact that some dispensing stations may be utilizing more than one container less than 4,000 gallons, but with an aggregate capacity greater than 4,000 gallons.

Unless product is being transferred, product control valves are normally in the closed position. However, some of the installations require an automatic shutoff feature when either a fire (or heat) is sensed or when other abnormal conditions occur. The product control valves include the following:

**Positive shutoff valve:** A shutoff valve that, in the closed position, does not allow the flow of product in either direction. [NFPA 58, 3.3.75.7]

**Backflow check valve:** This valve allows flow in one direction only and is used to allow a container to be filled while preventing product from flowing out of the container.

Excess-flow valve: A valve designed to close when the liquid or vapor passing through it exceeds a prescribed flow rate. [NFPA 58, 3.3.75.3]

Internal valve: A container primary shutoff valve that can be closed remotely, which incorporates an internal excess flow valve with the seat and seat disc located within the container so that they remain in place should external damage occur to the valve. [NFPA 58, 3.3.75.6]

Emergency shutoff valve: A shutoff valve incorporating thermal and manual means of closing that also provides for a remote means of closing. [NFPA 58, 3.3.75.2]

**Hydrostatic pressure relief valve**: A type of relief valve that is set to open and relieve pressure in a liquid hose or pipe segment between two shutoff valves when the pressure exceeds the setting of the valve.

Container pressure relief valve: A type of pressure relief device designed to open and then close to prevent excess internal fluid pressure in a container without releasing the entire contents of the container. The valve is located in the vapor space of the container.

Bulk storage installations incorporate several product release control appurtenances. This fire safety analysis manual outlines alternative schematics for the various facilities covered (4,000 gallons or less and greater than 4,000 gallons water capacity).

#### **CHAPTER 3**

# Principal Elements of the Fire Safety Analysis

The principal elements of the Fire Safety Analysis (FSA) required by NFPA 58 (in §6.27, and container protection requirements in §6.27.3) are described in this chapter. This manual for performing the FSA addresses the following LP-Gas facility-related items:

- 1 Effectiveness of Product Control measures
- 2 Local conditions of hazard within the container site, including congestion within the site
- 3 Exposure to off-site properties and populations and the impact of neighboring industrial activity on the facility
- 4 Effectiveness of the local Fire Department that may respond to an emergency within the facility
- 5 Requirements for and availability of adequate water supply
- Full compliance with Code requirements for existing LP-Gas facilities and corrective actions to be implemented for a proposed facility to address any deficiencies

The details of how each of the above items is evaluated in performing the FSA are indicated in Chapter 4 though Chapter 9. Shown below is a brief review of the various steps involved in conducting the FSA.

## 3.1 <u>Important Steps in Conducting the Analysis</u>

The development of a Fire Safety Analysis (FSA) involves a number of important steps. These steps are indicated in Table 3.1. Also shown in Table 3.1 are the chapters in this manual where the referenced analysis steps are discussed in detail.

Each set of FSA requirements is presented in one or more tables and fill-in forms. The tables provide either factual information or calculated results; the user obtains information from the tables for further analyses. The fill-in forms specify NFPA 58 requirements or other assessment parameters, and provide two columns, one with a "Yes" column heading and the other with a "No" heading. In some cases either schematic or pictorial representations are provided to clarify a requirement. The fill-in forms require some information input from the user, either checking a "Yes" column or a "No" column or writing a numerical value. Also provided are notes under each table or fill-in form, which explains conditions, if any, associated with the table or the form or how a calculation is performed for entering data into the form.

Appropriate explanations are provided in the text either preceding a form or after the form, if any action is necessary depending upon the values/contents in the forms. A blank copy of each form presented in Chapter 4 through Chapter 9 is provided in Appendix A. These can be reproduced and used for any number of LP-Gas facilities.

The FSA for a LP-Gas facility is conducted by systematically completing the forms in Chapter 4 through Chapter 9. The person completing the FSA must indicate a "Yes" or "No" in the appropriate column for each requirement, depending upon whether the LP-Gas facility fulfills the specific requirement. Any items, which may need to be undertaken to correct a deficiency in a proposed (as opposed to existing) LP-Gas facility are referred to in Chapter 9.

Once the FSA is complete, the forms together with information about the facility, can be filed to satisfy the "written" requirement of NFPA 58, §6.27.3.2 & 6.27.3.3. Any emergency planning for the facility is required to be coordinated with the local fire department or equivalent responding authority (§ 6.27.2.1).

#### 3.2 Completing the FSA

Chapters 4 through 9 provide a framework with which the Fire Safety Analysis can be conducted to satisfy the requirements of NFPA 58. It is important to note the following in performing the analysis using the tables, fill-in forms and steps indicated in the following chapters.

- All references to the "Code" in this manual are to the 2017 edition of the NFPA 58 "Liquefied Petroleum Gas Code."
- If a LP-Gas facility was built to satisfy the requirements of an edition of NFPA 58 earlier than the 2017 edition, then you may obtain a copy of the appropriate edition of the Fire Safety Analysis Manual and use that resource for your evaluation. If you must use this manual and an appurtenance or other requirement is specified in one or more of the forms in this manual (developed based on the 2017 edition), and this requirement was not in the edition to which the facility was built, then it is recommended that the "Yes" and "No" column corresponding to the particular appurtenance or requirement be left blank or marked "NA," to signify the requirement is not applicable to the facility in question.
- If the facility for which the analysis is being performed was constructed to satisfy the requirements of a previous edition of NFPA 58, it must still comply with all requirements that have been made applicable retroactively in later editions of the code, through the 2017 edition. Such retroactive provisions are indicated where they are applicable.

# Table 3.1 Description of the Various Steps in Performing the FSA

Step #	FSA Steps	Chapter where described	
1	Gather data on the volume of LP-Gas stored and other information pertinent to the facility.	Chanter 4	
2	Perform simple calculations and determine whether the facility is subject to the requirements for developing an FSA.	Chapter 4	
3	Evaluate the product control appurtenances and other safety features of the facility relative to the requirements of the NFPA 58 code.		
4	Assess the appurtenance requirements for containers of different capacities and compare them to the actual installation.		
5	Evaluate the requirements for valves on transfer piping and compare them to the valves provided in the facility.	Chapter 5	
6	Assess conformance to the code of a Redundant and Fail-Safe Product Control System, if such a system is provided in the facility.		
7	Evaluate the code conformance of the Low Emission Transfer Equipment if installed in the facility.		
8	Analyze the protection measures against local conditions of hazard. That is, assess whether all requirements of the code for the physical protection of containers and transfer piping are implemented.		
9	Analyze the code requirements for the control of ignition sources and whether these requirements are complied with.	Chapter 6	
10	Assess conformance to the code requirements for separation distances between (i) containers of different sizes and property lines and, (ii) LP-Gas transfer points and other exposures.	Chapter o	
11	Evaluate conformance to the code requirements for Special Protection Systems, if they are provided on containers in the facility.		
12	Evaluate the potential hazards to off-site populations and property from propane releases in the facility. This step includes selecting credible LP-Gas release scenarios and assessing the distance (and area) over which the hazard exists.		
13	Assess whether any off-site populations, especially people in institutional occupancies, are potentially subject to the LP-Gas release hazards	Chapter 7	
14	Evaluate whether there exists a hazard from other industrial operations around the LP-Gas facility	Chapter 7	
15	Evaluate the effectiveness of the local Fire Department, including the availability and capability of response personnel, training level, equipment and response time to an emergency in the facility.	Chapter 8	
16	Evaluate the amount of water needed to cool containers exposed to a fire and the adequacy of the facility (or locally available) water supply.	Chapter 6	
17	For a proposed facility, develop corrective actions to address deficiencies found.		
18	Assess, based on specific criteria, the need to provide Redundant and Fail-Safe Product Control Systems.	Chapter 9 (Only applicable	
19	Assess, based on specific criteria, the need to provide Low Emission Transfer Systems.	for proposed	
20	Assess when Special Protection Systems are needed	facilities)	
21	Evaluate alternative approaches to using water in a special protection system		

#### **CHAPTER 4**

# **Facility Information**

In this chapter basic information on the LP-Gas facility is recorded and a decision is made on whether the facility is required to have a completed Fire Safety Analysis (FSA) performed. If it is determined that a FSA is required, additional information on the facility is recorded.

#### 4.1 Initial Data for the LP-Gas Facility

Complete Form 4.1 to provide basic information on the facility.

Form 4.1 Initial Data on the LP-Gas Facility

A	В	С
Item #	Information Item	Data
1	Name of the LP-Gas Facility Owner or Operator	Jesus Aguirre
2	Contact Name:	Jesus
3	Contact Telephone & Fax Numbers	1-760-578-4724
4	Contact Email Address	aguirres.propane@yahoo.com
5	Mailing Address, PO Box 2822 Indio CA 92202	Street 1:1338 Glendale Ave Street 2:  City, State, Zip; Thermal, CA 92274

# 4.2 Facility Storage Capacity and Other Details

Complete Form 4.2. Multiply Column B by its corresponding entry in Column C, write the answer in the corresponding cell in Column D, then sum all the entries in Column D and write it in Row 2, Column D. This number is the "Aggregate Water Capacity" of the facility.

Form 4.2 Facility Storage Capacity 1,2,3

Α	В	С	D		
	Individual		Total		
Item #	Container Water Capacity (w.c.) (gallons)	Number of containers	Water Capacity (w.c. of each container size (gallons)		
	500	X	0		
	1,000	X	0		
	2,000	X	0		
	4,000	X	0		
	10,000	X	0		
1	18,000	X	0		
1	30,000	1	30,000		
	60,000	X	0		
	Other:				
2	Aggregate Water Capacity <sup>4</sup>	1	30,000		

Notes:

- (1) Column  $D = Column B \times Column C$ .
- (2) Parked bobtails, transports and tank cars should not be considered for aggregate capacity calculations.
- (3) Do not consider containers that are not connected for use.
- (4) For the purpose of this manual, "Aggregate Water Capacity" means any group of single ASME storage containers separated from each other by distances less than those stated in the aboveground containers column of Table 6.3.1.1.

If the aggregate water capacity of the LP-Gas facility is less than or equal to 4,000 gallon (w.c.), no further assessment is required.

#### YOU CAN STOP HERE.

If the aggregate water capacity of the facility is greater than 4,000 gallons, continue the analysis.

## 4.3 Additional Facility Information

Complete Form 4.3 below and record additional information on the facility.

Complete also the remainder of Fire Safety Analysis indicated in Chapter 5 through Chapter 8 (plus Chapter 9 for proposed facilities).

# Form 4.3 Additional Information on the LP-Gas Facility

	Existing Facility built to NFPA 58 Edition 2017 ☐ Proposed Facility
-)	Name of the Facility (if amplicable). A grime Decrees
a)	Name of the Facility (if applicable) Aguirre Propane
b)	Type of LP-Gas Facility
c)	Facility is located in   Rural Area   Suburban Area   City Commercial Zone   X City Industrial Zone
d)	Facility neighbors <sup>§</sup> : ☐ Agri. fields ☐ Commercial Bldgs. ☐ Flammable Liquids Storage (Check all that apply) ☐ Industrial Activity (metal fabrication, cutting and welding, etc) ☐ Manufacturing X Others (explain) <u>Transmit ion Building</u>
e)	Geographic Location of Facility/Address: 1338 Glendale Ave, Thermal CA
f)	Landmarks, if any:  N/A
g)	LP-Gas liquid supply by: ☐ Bobtail X Truck Transport ☐ Rail Tank Car (Check all that apply) Pipeline
h)	LP-Gas Distribution by: X Bobtail □ Truck Transport □ Vapor Piping (Check all that apply) □ Liquid Piping □ Dispensing or Vehicle Liquid fueling
i)	Number of Vehicle Entrances: X One ☐ Two ☐ More than two
j)	Type of Access Roads to the Facility (One check per line) Entrance 1 □ Dirt road □ Gravel road □ Paved (One check per line) Entrance 2 □ Dirt road □ Gravel road □ Paved
k)	Staff presence ☐ Not staffed ☐ X Only during transfer operations ☐ Staffed always (24/7) ☐ Only during business hours ☐ Other (Explain)
1)	Location and distances to Assembly, Educational or Institutional Occupancies surrounding the facility, if any, within 250 ft from the facility boundary in the direction of the assets. N/A
m)	Overview plot plan of the facility attached? X Yes   No

<sup>§</sup> All properties either abutting the LP-Gas facility or within 250 feet of the container or transfer point nearest to facility boundary.

#### **CHAPTER 5**

# **Analysis of Product Control Measures In Containers and Transfer Piping**

#### 5.1 Product Control Measures in Containers

NFPA 58 requires the installation of several product control safety devices both on containers and in transfer piping to minimize the accidental release of LP-Gas, either liquid or vapor. The requirements for product control equipment depend on the following:

- The size of individual containers,
- Whether the containers in a facility are individually filled or filled through a common liquid manifold,
- Whether the product is transferred from the storage container as a liquid or vapor (or both).

A facility may have LP-Gas containers of different sizes; it is therefore necessary to evaluate compliance with the code requirements on a container-by-container basis as well as on a facility basis.

In this chapter, the appurtenance requirements of the code are listed for LP-Gas containers of different sizes. A series of forms are provided which indicate the code-required product control hardware for container and facility piping. The forms also provide space to record the product control equipment actually installed on the containers as well as transfer piping at the facility. These forms must be completed as a part of this Fire Safety Analysis.

Note: Section numbers and table numbers have been changed significantly as a result of Tentative Interim Amendment TIA 14-3, shown in Appendix C.

Complete Forms 5.1 or 5.2 depending upon the size of the individual containers in the facility. Then, perform an analysis of the product control appurtenances for each container located in the facility.

Table 5.1
Container Size-Dependent Evaluations

individual conta	facility contains iners in the volume allons w.c.)		Perform the analysis specified
Greater than	And Less than or equal to		in Section
0	4,000	0	5.1.1
4,000	-	0	5.1.2

#### 5.1.1 Individual Containers of Water Capacity less than or equal to 4,000 gallons

Containers of 4,000 gallons water capacity (w.c.) or less can be configured with product control appurtenances in a number of different ways. These are schematically illustrated in Figures 5-1A through Figure 5-1E. Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes

#### Complete the following steps using the schematics in Figure 5-1A through Figure 5-1E

- 1 Select the first container at the facility, which has a water capacity of 4,000 gallons or less. Enter this as container number 1 in Column A of Form 5.1, below.
- 2 Review each of the service configurations given in Figure 5-1A through Figure 5-1E. Select the schematic that most closely represents the configuration in the facility for this container. Enter the figure number of the configuration selected for this container in Column B.
- 3 Count the total <u>number</u> of "Yes" shown in this configuration. This represents the number of required appurtenances for the specific configuration. Enter this number in column C of Form 5.1.
- 4 Check "Yes" under each appurtenance that is actually installed on the container. If the appurtenance is not provided, then check "No."
- 5 Count the number of boxes checked "Yes." Enter this number in Column D of Form 5.1.
- 6 Repeat steps 1 through 5 for each container of 4,000 gallons water capacity or less at the facility.

Form 5.1

Compliance with Code Requirements for Appurtenances on Containers of 4,000 Gallons Water Capacity or Less

A	В	C	D	E	
	Service		oduct Control enances	NFPA 58	
Container #	Configuration Sub Figure (in Figure 5-1)	Required by NFPA 58 (applicable edition)	Installed on the Container	Section Reference (2017 edition)	
1	n/a				
2	n/a			5.7.4.1	
3	n/a			Table 5.7.4.1(B)	
4	n/a			and	
5	n/a			5.7.4.4	
6	n/a				

If, in Form 5.1, any one of the numbers in column D is less than the number in Column C of the corresponding row, then these items must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

# Figure 5-1 Schematic Representation of the NFPA 58 Requirements for Product Control Appurtenances on Containers of Water Capacity Less Than or Equal to 4,000 Gallons, with Different Service Configurations

(Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes)

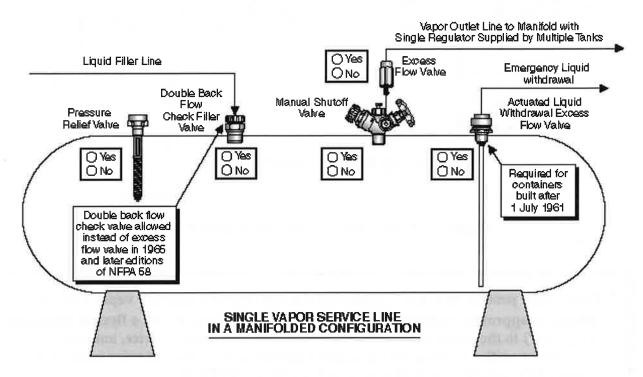


Figure 5-1A: Single Vapor Service Line in a Manifolded Configuration

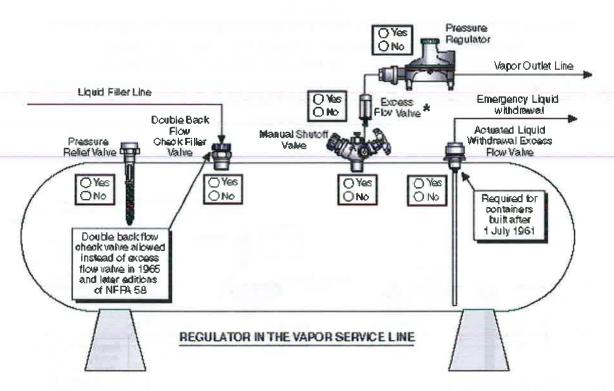
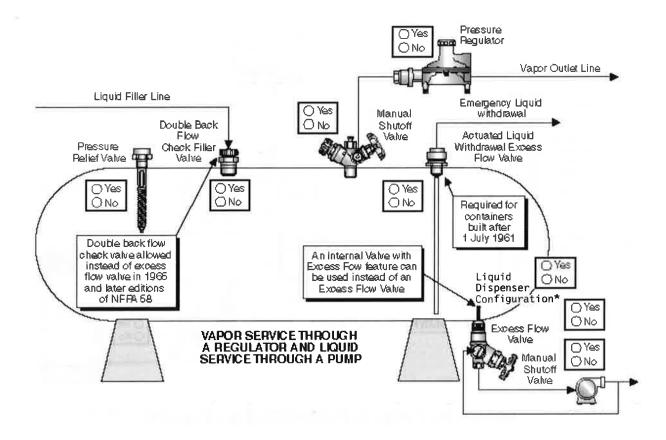


Figure 5-1B: Regulator in the Vapor Service Line

\* Excess-flow protection is not required for manual shutoff valves for vapor service where an approved regulator is directly attached or attached with a flexible connector ("pig tail") to the outlet of the manual shutoff valve for vapor service, and the controlling orifice between the container contents and the shutoff valve outlet does not exceed 5/16 inch (8 mm) in diameter (5.7.4.1 (B)(8), NFPA 58).



<sup>\*</sup>For liquid dispenser configuration, see 6.25.3.8.

Figure 5-1C: Container with Both Liquid and Vapor Service, Regulator in the Vapor Service Line.

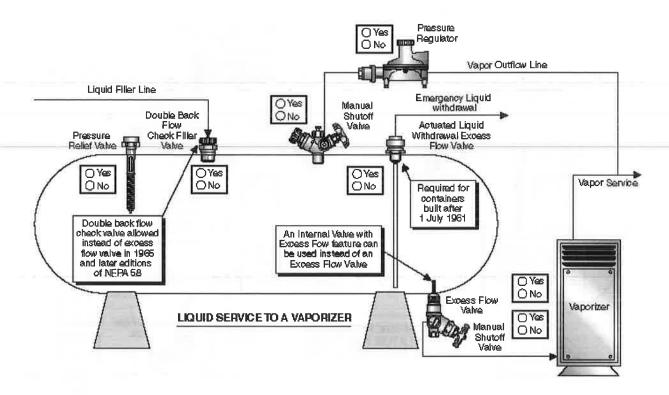
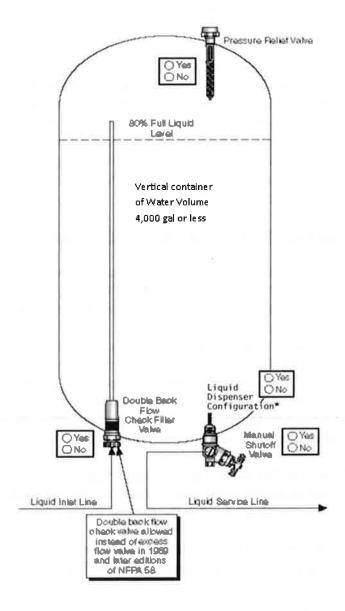


Figure 5-1D: Container Feeding Liquid to a Vaporizer.



<sup>\*</sup>For liquid dispenser configuration, see 6.25.3.8.

Figure 5-1E: Vertical Container for Liquid Service, 4,000 Gallon w.c. or Less.

#### 5.1.2 Individual Containers Having a Water Capacity Greater than 4,000 Gallons

The compliance with the code requirements for appurtenances in this container size range must be evaluated for LP-Gas flow both into the container (vapor and liquid) and out of the container (vapor and liquid). In addition, note that there are retrofit requirements for existing containers without internal valves in liquid service that were to be completed by July 1, 2011. Several different appurtenance service configurations meet these requirements. These are indicated in Form 5.3. Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes.

#### Enter the information in Form 5.2 by following the steps indicated below

- 1 Select the first container in the facility having a water capacity greater than 4,000 gallons. Enter this as container number 1 in Column A of Form 5.2 below.
- 2 Complete each of the rows identified as the vapor inlet, vapor outlet, liquid inlet and liquid outlet service for this container.
- 3 Select the appurtenance configuration for vapor service which most closely corresponds to the design used in the facility. Figure 5-2 shows different vapor inlet configurations. Enter in column D the configuration number that corresponds to the design used in the facility.
- 4 Count all "Yes" in the schematic sketch corresponding to this configuration and which provide for vapor inlet into the container. This is the number of required appurtenances that should be provided according to the code. Enter this number in column E of the row corresponding to "Vapor Inlet."
- 5 Check "Yes" corresponding to each appurtenance that is <u>installed</u> on this container. If the appurtenance is not provided, then check "No". Count the total number of boxes with <u>installed</u> appurtenance marked "Yes" in the facility. Record this number in column F of the same row.
- 6 Repeat steps 3, 4 and 5 for each vapor outlet configuration (using Figure 5-3), liquid inlet configuration (using Figure 5-6) and liquid outlet configuration (using Figure 5-7).
- 7 Repeat steps 1 through 6 for each container of water capacity greater than 4,000 gallons located at the facility.

Form 5.2

Compliance with Code Requirements for Appurtenances on Containers Having a Water Capacity Greater Than 4,000 Gallons

A	В	C		D	E	F	G
Container and out		inlet to let from ainer**	Con a	nter ifigur- tion mber	Total Nu Product Appurte Required by NFPA 58 (applicable	Control	NFPA 58 Section Reference (2017 edition)
		Inlet	5-2	2	edition)	2	
1	Vapor	Outlet	5-3	2	2017	2	
	Liquid	Inlet	5-6	4	2017	4	
		Outlet	5-7	4	2017	4	
	Vapor	Inlet	5-2		0	0	
2		Outlet	5-3		0	0	5740
2	Liquid	Inlet	5-6		0	0	5.7.4.2,
		Outlet	5-7		0	0	Table 5.7.4.2 and
	Vanor	Inlet	5-2		0	0	5.7.4.3
3	Vapor	Outlet	5-3		0	0	3.7.4.3
3	Liquid	Inlet	5-6		0	0	
	Liquid	Outlet	5-7		0	0	
	Vanor	Inlet	5-2		0	0	
4	Vapor	Outlet	5-3		0	0	- 8 -
4	Lianid	Inlet	5-6		0	0	
	Liquid	Outlet	5-7		0	0	

<sup>\*\*</sup> If the container does not provide an opening for the specific function listed, enter 0 (zero) in columns E and F corresponding to that row.

If in Form 5.2 any one of the numbers in column F is less than the number in Column E of the corresponding row, these items must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

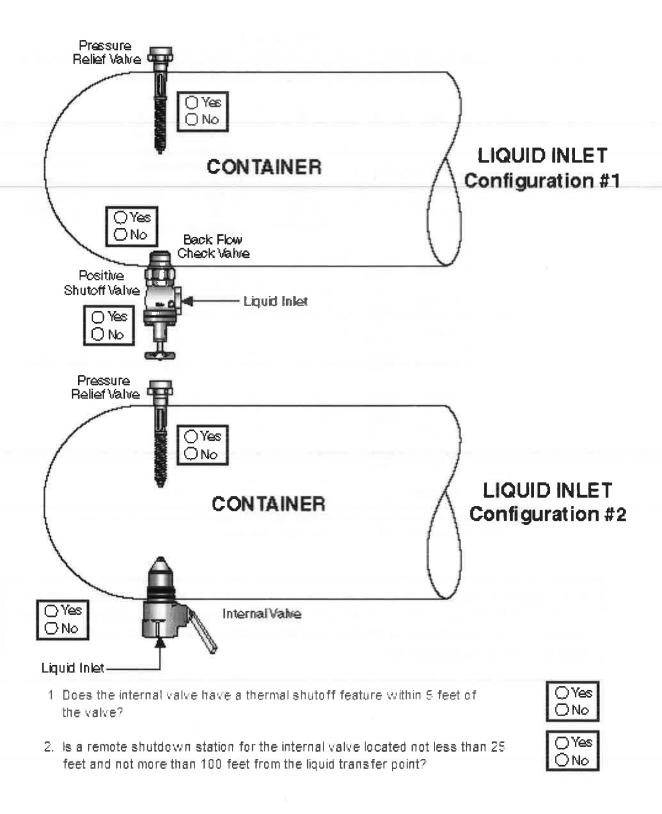
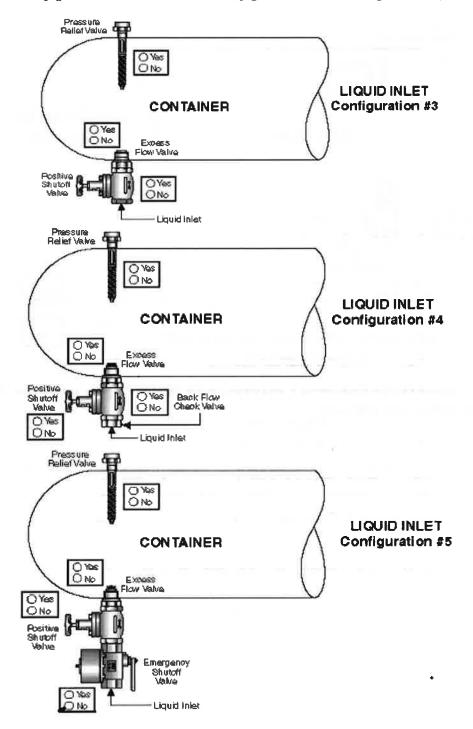


Figure 5-6A Liquid Inlet Valves on Containers With Water Capacity Greater Than 4,000 Gallons in New Installations

(NOTE: Prior to July 1, 2011 <u>existing</u> installations may utilize Configurations 3, 4 or 5 of Fig 5-6B, or either configuration in Figure 5-6A. After July 1, 2011, installations must comply with Configurations 4 or 5 below, or Configuration 1 or 2 in Figure 5-6A.)



Note: The emergency shutoff valve in configuration #5 must be equipped for remote closure. This valve must be installed in the line upstream as close as practical to the positive shutoff valve/excess- flow valve combination.

Figure 5-6B: Liquid Inlet Valves on Containers With Water Capacity Greater Than 4,000 Gallons in Existing Installations

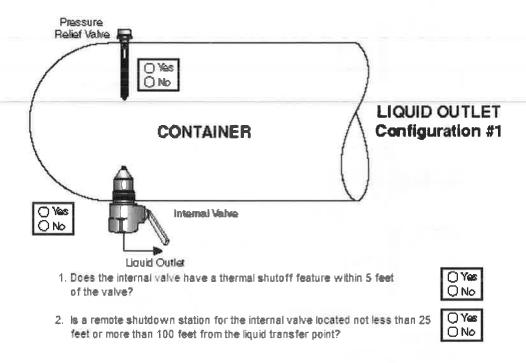
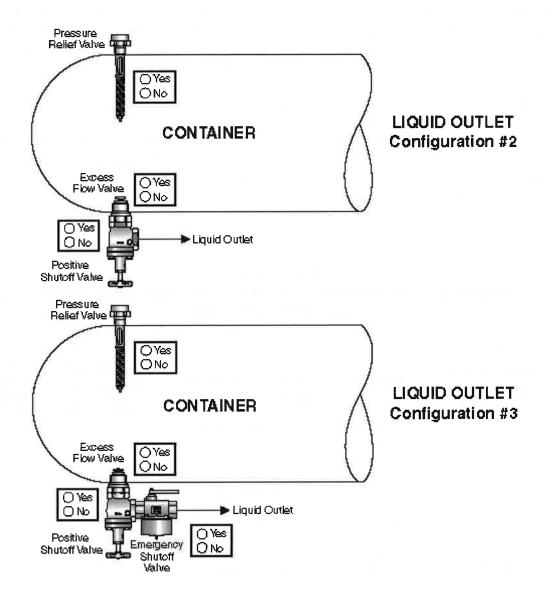


Figure 5-7A: Liquid Outlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in New Installations

(NOTE: Prior to July 1, 2011, <u>existing</u> installations may utilize Configurations 2 or 3 of Fig 5-7B or Configuration 1 in Figure 5-7A. After July 1, 2011, installations must comply with Configuration 3 in Figure 5-7B or Configuration 1 in Fig. 5-7A).



Note: The emergency shutoff valve in configuration # 3 must be equipped for remote closure. This valve must be installed in the line downstream, as close as practical to the positive shutoff valve/excess- flow valve combination.

Figure 5-7B: Liquid Outlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in Existing Installations

## 5.2 <u>Product Control Measures in Transfer Piping</u>

#### 5.2.1 Manifolded and Remotely Filled Containers

The containers in some LP-Gas facilities, especially in bulk plants, may be remotely filled with an inlet manifold connected to one or more containers. The vapor withdrawal or liquid withdrawal from containers may also be through a common manifold. In such cases, there are several appurtenance requirements to control the potential release of product.

If the facility contains a liquid transfer line header (manifold) 1½-inch diameter or larger, and a pressure equalizing vapor line that is 1½-inch diameter or larger, then continue with the analysis in this section by completing Form 5.3, Form 5.4 and Form 5.5. Otherwise, skip this section and go to section 5.3. Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes.

Form 5.3
Requirements for Transfer Lines of 1½-inch Diameter or Larger,
Liquid-into-Containers

A	В	C	D	E	F
Item #	Appurtenance (Either No. 1	Appurtenance Provided with the	Installed in the facility?		NFPA 58 Section
#	or No. 2)**	Feature	Yes	No	Reference (2017 edition)
		Installed within 20 ft. of lineal pipe from the nearest end of the hose or swivel-type connections.	X		6.12.2
		Automatic shutoff through thermal (fire) actuation element with maximum melting point of 250 °F	X		6.12.6
		Temperature sensitive element (fusible link) installed within 5 ft from the nearest end of the hose or swivel type piping connected to liquid transfer line.	X		6.12.6
	Emergency shutoff valve	Manually operated remote shutoff feature provided for ESV.	X		6.12.12.1
1	(ESV) (Ref § 6.12)	Manual shutoff device provided at a remote location, not less than 25 ft., and not more than 100 ft. from the ESV in the path of egress.	X		6.12.12.2
	(Ref § 0.12)	An ESV is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of size 1½ inch in diameter or larger on the other side.	X		6.12.5 and 6.19.2.6 (1)
		Breakaway protection is provided such that in any pull-away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8

Form 5.3 (continued)

			Openit transferred C		
A	В	C	D	E	F

Item	Appurtenance Provided with		Installed in the facility?		NFPA 58 Section
#		Feature	Yes	No	Reference (2017 edition)
		Installed downstream of the hose or swivel-type connection	х		6.12.3
		BCK is designed for this specific application.	X		6.12.4
2	Backflow check valve (BCK)**	A BCK is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1½ inch in diameter or larger on the other side.	X		6.12.5
	(BCK)	Breakaway protection is provided such that in any pull-away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8
3	Debris Protection++	Liquid inlet piping is designed or equipped to prevent debris and foreign material from entering the system.	X		6.19.2.5
4	Emergency discharge control	Flow through facility hose used to transfer LP-Gas from non-metered cargo tank vehicle into containers will stop within 20 seconds of a complete hose separation without human intervention.	X		6.19.2.6 (3)

<sup>\*\*</sup> In lieu of an emergency shutoff valve, the backflow check valve (BCK) is only permitted when flow is only into the container and shall have a metal-to-metal seat or a primary resilient seat with metal backup, not hinged with a combustible material (6.12.3, 6.12.4).

<sup>++</sup> Retrofit required for existing facilities by July 1, 2011.

**Liquid Withdrawal From Containers** 

A	В	C	D	E	F
Item	Appurtenance	Appurtenance Provided with the Feature	Installed in the facility?		NFPA 58 Section
#			Yes	No	NFPA 58 Section Reference
		Installed within 20 ft. of lineal pipe from the nearest end of the hose or swivel-type connections.	X		6.12.2
		Automatic shutoff through thermal (fire) actuation element with maximum melting point of 250 °F.	X		Section Reference (2017 Edition) 6.12.2 6.12.6 6.12.6 6.12.12.1 6.12.12.2 6.12.5 and 6.19.2.6 (1)
		Temperature sensitive element installed within 5 ft from the nearest end of the hose or swivel type piping connected to liquid transfer line.	X		6.12.6
	Emergency	Manually operated remote shutoff feature provided for ESV.	X		6.12.12.1
1	shutoff valve (ESV)	Manual shutoff device provided at a remote location, not less than 25 ft., and not more than 100 ft. from the ESV in the path of egress.	X		6.12.12.2
	(Ref § 6.12)	An ESV is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1½ inch in diameter or larger on the other side.	X		
		Breakaway protection is provided such that in any pull-away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8
		Number of ESV's in liquid withdrawal service			

Note: If more than one ESV is installed in the facility, use one Form 5.4 for each ESV.

Form 5.5
Requirements for Vapor Transfer Lines 1¼-inch Diameter or Larger

A	В	С	D	E	F
Item #	Appurtenance	Appurtenance Provided with the Feature	Installed in the facility?		NFPA 58 Section
Ħ			Yes	No	(2017 edition)
		Installed within 20 ft. of lineal pipe from the nearest end of the hose or swivel-type connections.	X		6.12.2
		Automatic shutoff through thermal (fire) actuation element with maximum melting point of 250 °F	X		NFPA 58 Section Reference (2017 edition)
		Temperature sensitive element installed within 5 ft from the nearest end of the hose or swivel type piping connected to liquid transfer line.	X		
	Emergency	Manually operated remote shutoff feature provided for ESV.	X		
1	shutoff valve (ESV) (Ref § 6.12)	Manual shutoff device provided at a remote location, not less than 25 ft., and not more than 100 ft. from the ESV in the path of egress.	X		6.12.12.2
	(101 § 0.12)	An ESV is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1-1/4 inch in diameter or larger on the other side.	X		
		Breakaway protection is provided such that in any pull- away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	Х		6.12.8
		Installed downstream of the hose or swivel-type connection	X		6.12.3
		BCK is designed for this specific application.	X		6.12.4
2	Backflow check valve (BCK)**	A BCK is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1-1/4 inch in diameter or larger on the other side.	X		6.12.5
		Breakaway protection is provided such that in any pull- away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8

In lieu of an emergency shutoff valve, the backflow check valve (BCK) is only permitted when flow is only into the container and it shall have a metal-to-metal seat or a primary resilient seat with metal backup, not hinged with a combustible material (6.12.3, 6.12.4).

If a checkmark is made in the "No" column of any one of Form 5.3, Form 5.4 or Form 5.5, then these items must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

If the LP-Gas facility is designed using ALTERNATE PROVISIONS for the installation of ASME CONTAINERS, then continue the analysis below. Otherwise skip section 5.3 and go to Chapter 6.

#### 5.3 Alternate Provisions for the Installation of ASME Containers

Facilities may be provided with redundant fail-safe product control measures (section 5.3.1) and incorporate equipment designed for low emissions during transfer operations (section 5.3.2). These types of (redundant and fail-safe) product control measures and low emission transfer equipment provide additional safety and qualify the facility for the following benefits:

- Reduced separation distances from adjacent properties, and
- Mitigation of the need for special protection requirements.

Note that the reduced separation distance applies only to underground and mounded containers 2,001 through 30,000 gallons where all the requirements of NFPA 58 Section 6.28 (summarized in Forms 5.6 and 5.7) are complied with.

# 5.3.1 <u>ASME Container Appurtenances and Redundant Fail-Safe Product Control Systems</u>

If the facility incorporates redundant, fail-safe equipment, complete Form 5.6 below. The evaluation will indicate whether the design of the facility complies with the requirements for redundant and fail-safe product control systems. If redundant, fail-safe equipment are not provided, skip this section.

Form 5.6 Evaluation of Redundant Fail-Safe Design

A		В	C	D	E	F
I t	Description  Container sizes for which the appurtenances are provided			Installed in the facility?		NFPA 58 Section
e m #			Features	Yes	No	Reference (2017 edition)
1			Appurtenances and redundant fail-safe equipment are provided for <u>each</u> container of water capacity 2,001 gal. through 30,000 gal.	X		6.28.3 and 6.28.4
2	Liquid or vapor withdrawal (1-1/4 in. or larger)		Internal valve having internal excess-flow valve	X		6.28.3.1 and 6.28.3.2
			Positive shutoff valve installed as close as practical to the internal valve	X		6.28.3.4
3	Liquid or vapor inlet		Internal valve having internal excess-flow valve or backflow check valve	X		6.28.3.5
			Positive shutoff valve installed as close as possible to the internal valve or the backflow check valve	X		6.28.3.5
4	Railcar transfer	Flow into or out of railroad tank car	Approved emergency shutoff valves installed in the transfer hose or the swivel-type piping at the tank car end	N/A	N/A	6.19.2.6 (1) and 6.28.4
		Flow only into railroad tank car	Approved emergency shutoff valve or backflow check valve installed in the transfer hose or the swivel-type piping at the tank car end	N/A	N/A	6.19.2.6 (2) and 6.28.4
5	Cargo tank transfer		Protection provided in accordance with 6.12	X		6.28.4.1
	Automatic closure of all primary valves (IV & ESV) in an emergency		By thermal (Fire) actuation	X		6.28.4.2
6			Actuated by a hose pull-away due to vehicle motion	X		6.28.4.2
7	Manually operated remote shutdown of IV and ESV		Remote shutdown station within 15 ft of the point of transfer	X		6.28.4.3 (A)
			Another remote shutdown station between 25 ft and 100 ft of the transfer point	X		6.28.4.3 (B)
			Shutdown stations will shut down electrical power supply to the transfer equipment and shut down all primary valves (Internal & Emergency Valves).	X		6.28.4.3
			Signs complying with the requirements of 6.28.4.3 (C) provided	X		6.28.4.3 (C)

Note: If the facility does not have a rail terminal, write the word NA in both the "Yes" column and the "No" column in item 4 of this Form in the railroad tank car row. Similar option is also available if there is no cargo tank vehicle transfer station.

If the LP-Gas facility is provided with LOW EMISSION TRANSFER EQUIPMENT, then continue the analysis below. Otherwise skip section 5.3.2 and go to Chapter 6.

#### 5.3.2 Low Emission Transfer Equipment

If the facility is designed with low emission transfer hoses and associated equipment, complete Form 5.7 below. Compliance with Section 6.28.5 of NFPA 58 results in a 50% reduction in the separation distances between transfer points described in Table 6.5.2.1 and Section 6.25.4.3. If the facility does not have low emission transfer equipment engineered into the facility design, skip this section.

Form 5.7
Evaluation of Low Emission Transfer Equipment

A	В	C		D	E	F
I t e	Description	Features		Installed in the facility?		NFPA 58 Section Reference
m #				Yes	No	(2017 Edition)
1	Transfer into permanently mounted ASME containers on vehicles	Delivery nozzle and filler valve- Max. liquid release after transfer of 4 cm <sup>3</sup> (0.24 in <sup>3</sup> ).	Fixed maximum liquid level gage not used during transfer operations	X		6.28.5.3 (A) & (B)
2	Transfer into stationary ASME containers. delivery valve and nozzle combination	During product transfer or post transfer uncoupling of the hose, liquid product volume released to the atmosphere	Does not exceed 4 cm <sup>3</sup> (0.24 in <sup>3</sup> ) from a hose of nominal size 1 in or smaller	N/A	N/A	6.28.5.4 (A)
2			Does not exceed 15 cm <sup>3</sup> (0.91 in <sup>3</sup> ) from a hose of nominal size larger than 1 in.	Х		6.28.5.4 (B)
3	Transfer into stationary ASME containers	Do containers of less than 2,001 gal (w.c.) have an overfilling prevention device or another approved device?		N/A	N/A	6.28.5.4 (F)
	maximum filling limit	Do containers 2,001 gal (w.c.) or greater have a float gage or other non-venting device?		X		6.28.5.4 (E)
4	Transfer into stationary ASME containers fixed maximum liquid level gage  Not used during routine tran used to calibrate other non-v gages in the container		transfer operations but	N/A	N/A	6.28.5.4 (C) & (D)

**Note:** 1) If the facility does not have a particular feature described in items 2 or 3, write "NA" in both the "Yes" and "No" columns corresponding to its row.

If separation distance reductions are intended, checkmarks made in the "No" column of either Form 5.6 or Form 5.7 must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

#### **CHAPTER 6**

# **Analysis of Local Conditions of Hazard**

#### 6.1 Physical Protection Measures

Protection should be provided for LP-gas facilities, systems and appurtenances against the risk of tampering and from the accidental collision of vehicles with containers and/or transfer lines. Requirements to prevent such tampering or accidents are specified in the code. Compliance requirements for the facility are indicated in Form 6.1. Complete all forms in this chapter. (**NOTE:** See NFPA 58 for complete requirements.)

Form 6.1
Evaluation of Physical Protection and Other Measures

A	В	C	D	E	F
#	Item	Features	Installed in the facility?		NFPA 58 Section Reference
				No	(2017 Edition)
1	Lighting <sup>‡</sup>	Provide lighting for nighttime operations to illuminate storage containers, container being loaded, control valves, and other equipment	X		6.19.5
2	Vehicle impact protection	Protection against vehicular (traffic) impacts on containers, transfer piping and other appurtenances is designed and provided commensurate with the size of vehicles and type of traffic in the facility. (Example protection systems include but not limited to (1) Guard rails, (2) Steel bollards or crash posts, (3) Raised sidewalks.	X		6.6.1.2 and 6.9.3.10
3	Protection against corrosion	Provide protection against corrosion where piping is in contact with supports or corrosion causing substances.	X		6.9.3.11, 6.9.3.14, and 6.17
		Complete only 4A or 4B	STEEL ST		
	Perimeter Fence	Is an industrial type or chain link fence of at least 6 ft high or equivalent protection provided to enclose (all around) container appurtenances, pumping equipment, loading and unloading and container filling facilities?	X		6.19.4.2
4 A		Are at least two means of emergency egress (gates) from the enclosure provided?  NOTE: Write "N.A." (not applicable) if  (i) The area enclosed is less than 100 ft², or  (ii) The point of transfer is within 3 ft of the gate, or containers are not filled within the enclosure	N/A	N/A	6.19.4.2 (A)
		Is a clearance of at least 3 feet all around to allow emergency access to the required means of egress provided?	X		6.19.4.2 (B)
	Guard Service	If a guard service is provided, does this service cover the LP-Gas plant and are the guard personnel provided with appropriate LP-Gas related training, per section 4.4 of NFPA 58?	N/A	N/A	6.19.4.3
II I		A. T. I. Discolation model de monte de la company	V		
4 B	Lock-in-Place devices	Are Lock-in-Place devices provided to prevent unauthorized use or operation of any container appurtenance, system valves, or equipment in lieu of the fence requirements above?	X		6.19.4.2 (C)

**Note:** Fill only items 1, 2, 3, and 4A or 4B. Indicate with "NA" when not filling the "Yes" or "No" column. ‡ Indicate with "NA" if the facility is not operated at night.

#### 6.2 Ignition Sources and Control

The potential for the ignition of LP-Gas vapors released in a facility is reduced by eliminating as many ignition sources as possible, designing electrical equipment to reduce or eliminate sparking and ensuring that during transfer operations known ignition sources are turned off. The ignition source control involves both passive methods as well active methods. Form 6.2 is used to evaluate whether your facility satisfies the code requirements for ignition source control. (**NOTE:** See NFPA 58 for complete requirements.)

Form 6.2
Assessment of Sources of Ignition and Adjacent Combustible Materials

A	В	C	D	E	
#	Sources of Ignition and Requirements Pertaining to Adjacent Combustible	Is the Facility compliant?		NFPA 58 Section	
	Materials	Yes	No	Reference (2017 Edition)	
1	Are combustible materials not closer than 10 ft. from each container?	X		6.4.4.3	
2	Is a distance at least 20 ft. provided between containers and tanks containing flammable liquids with flash point less than 200 °F (ex., gasoline, diesel)?	N/A	N/A	6.4.4.6	
3	Are electrical equipment and wiring installed per Code requirements?	X		6.23.2	
4	Is open flame equipment located and used according to Code?	X		6.23.3.1	
5	Are ignition control procedures and requirements during liquid transfer operations complied with?	X		7.2.3.2	
6	Is an approved, portable, dry chemical fire extinguisher of minimum capacity 18 Lbs. and having a B:C rating provided in the facility?	X		6.27.4.2	
7	Is an approved, portable, dry chemical fire extinguisher of minimum capacity 18 Lbs. and having a B:C rating provided on each truck or trailer used to transport propane?	X		9.3.5 and 9.4.7	
8	Is the prohibition on smoking within the facility premises strictly enforced?	Х		7.2.3.2 (B) and 9.4.10	

Note: Insert "NA" in both "Yes" and "No" columns of any items that are not applicable.

## 6.3 Separation Distances

# 6.3.1 <u>Separation Distances between Container and Important Buildings, Other Properties and Transfer Points</u>

The separation distance provisions in NFPA 58 are minimum requirements and are intended to buy time in an emergency and to implement appropriate response. The requirements are dependent upon the size of the container. Complete the appropriate section of Form 6.3. (**NOTE:** See NFPA 58 for complete requirements.)

Form 6.3
Separation Distances from Containers to Buildings, Property Lines that can be Built upon, Inter-container Distances, and Aboveground Flammable or Combustible Storage Tanks

A	В	С	D	E	F	G
	Container Size	Size Separation between			Facility pliant?	NFPA 58 Section
#	Range in gal (W.C.)	other property and the <u>nearest</u> container which is	Distance (ft)	Yes	No	Reference (2017 Edition)
1	501 through	Aboveground	25	N/A	N/A	6.3.1, 6.3.2 and Table 6.3.1.1
	2,000	Underground or Mounded	10	N/A	N/A	
		Between containers	3	N/A	N/ A	
	2,001	Aboveground	50	X		
2	through	Underground or Mounded	50	N/A	N/A	
	30,000	Between containers	5	N/A	N/A	
		Aboveground	75	N/A	N/A	
		Underground or Mounded	50			
3	30,001 through 70,000	Between containers	1/4 sum of diameters of adjacent containers	N/A	N/a	
		Aboveground	100	N/A	N/A	
		Underground or Mounded	50	N/A	N/A	
4	70,001 through 90,000	Between containers	1/4 sum of diameters of adjacent containers	N/A	N/A	
5	All sizes greater than 125 gal	Separation distance between an aboveground LP-Gas container and an aboveground storage tank containing flammable or combustible liquids of flash points below 200 °F.	20	N/A	N/A	6.4.4.6 and 6.4.4.7

If the LP-Gas plant is provided with every one of the redundant and fail- safe product control-design equipment indicated in Form 5.6, then the minimum distance in column D of Form 6.3 can be reduced to 10 feet for underground and mounded containers of water capacity 2,001 gal to 30,000

Note: If any of the container sizes indicated in the above form are not present in the facility, enter "NA" in both Yes and No columns.

#### 6.3.2 Separation Distances between Transfer Points and other Exposures

If the liquid transfer point is not on the container but is at a remote location complete Form 6.4. **Do not complete Form 6.4 when the filling is through a container valve.**(NOTE: See NFPA 58 for complete requirements.)

Form 6.4
Separation Distances between Points of Transfer and other Exposures

A		C	D	E	F	G	
#	Type of Exposure within or outside the facility		Check if exposure	Minimum Distance	Is the Facility compliant?		NFPA 58 Section
π	boun	boundary			Yes	No	Reference (2017 Edition)
1	Buildings, mobile homes and modular homes with walls		10	X			
2	Buildings with other than walls	at least 1-hour fire-rated		25	X		
3	Building wall openings of level of the point of trans			25	X		
4	Line of adjoining propert	y that can be built upon		25	X		1
5	Outdoor places of public school yards, athletic field			50	X		
6	Public ways, including public streets, highways,	From points of transfer in LP-Gas dispensing stations and at vehicle fuel dispensers.		10	X		Section 6.5.2 and Table 6.5.2.1
	thoroughfares, and sidewalks	From other points of transfer		25	X		
7	Driveways			5	X		
8	Mainline railroad track co			25	X		
9	Containers other than tho			10	X		
10	Flammable and Class II of dispensers and the fill constationary containers		10	X			
11	Flammable and Class II c aboveground containers a underground containers		20	X			
12	LP-Gas dispensing device Class I liquid dispensing			10	X		6.25.4.3

**NOTE:** Place a checkmark in column C against an exposure that is present in or around the facility. Fill columns E or F for only those rows for which there is a checkmark in column C.

If the facility contains low emission transfer equipment (i.e, all equipment identified in Form 5.7 are installed and are in working order), then the minimum separation distances in column D of Form 6.4 can be reduced to one half of the indicated values.

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If the containers in the LP-Gas facility are provided with SPECIAL PROTECTION MEASURES, then continue the analysis below. Otherwise skip Forms 6.5 and 6.6 and go to Section 6.5. Also see Chapter 9.

### 6.4 Special Protection

In the event that a proposed installation is adjacent to a property containing extremely high combustible fuels and the location of the storage containers is such that exposure of the containers to a fire on the adjacent property would severely impact the integrity of the containers, special protection methods may be utilized to reduce the exposure hazard to the containers. Installed special protection systems must comply with section 6.27.5 of NFPA 58, which addresses both passive and active protection systems.

- Passive approaches include insulating the outside of the containers, mounding above grade or burying the container.
- Active special protection includes fixed water spray systems or placement of monitor nozzles at strategic locations with respect to the containers to be protected.

Complete form 6.5 to determine compliance of the installation with the code. Similarly, Form 6.6 indicates the requirements for active protection. This Form also should be completed as part of the fire safety analysis process.

(**NOTE:**. See NFPA 58 for complete requirements.)

Form 6.5
Special Protection Measures –Passive Systems

A	В	C	D		E
Special # Protection		Question	Is the Facility compliant?		NFPA 58 Section
#	Option	Question	Yes	No	Reference (2017 Edition)
,	Container Insulation	Insulation provided on each of the containers?		X	6.27.5.1
1	Container Insulation	Insulation material complies with the requirements of NFPA 58?	NA	NA	6.27.5.1 and 6.27.5.2
	Marakaras	Each container in the facility is mounded?	NA	NA	6.27.5.3
2	Mounding of containers	Mounding complies with each requirement under section 6.6.6.3 of NFPA 58.	NA	NA	6.6.6.3 and 6.27.5.3
		Each container in the facility is buried?	NA	NA	6.27.5.4
3	Burying of containers	Buried containers comply with each requirement under section 6.6.6.1 of NFPA 58.	NA	NA	6.6.6.1 and 6.27.5.4

Form 6.6 Special Protection Measures –Active Systems

#	Special Protection	Question		Facility bliant?	NFPA 58 Section
	Option	Question	Yes	No	Reference (2017 Edition)
		Are fixed water spray systems, complying with NFPA 15 <sup>1</sup> requirements, used for each container in the facility?		X	6.27.6.1
1	Water spray systems	Do fire responsive devices actuate water spray system automatically?		X	6.27.6.2
		Can the water spray systems be actuated manually also?		X	6.27.6.2
		Are the monitor nozzles located and arranged so that the water stream can wet the surfaces of all containers exposed to a fire?		X	6.27.6.3
2	Monitor nozzle	Can the water stream from a monitor nozzle reach and wet the entire surface of, at least, one half of a length from one end of each of the containers it is designed to protect? <sup>1</sup>		X	6.27.6.3
	systems	Do fixed monitor nozzles comply with NFPA 15 <sup>2</sup> requirements?		X	6.27.6.1
		Do fire responsive devices actuate the monitor nozzles?		X	6.27.6.2
1 0		Can the monitor nozzles can be actuated manually also?		X	6.27.6.2

<sup>1.</sup> See discussion in Section 8.2

## 6.5 <u>Vehicular Protection</u>

In the event that an installation is located where an immediate threat due to vehicular traffic is present, a barrier or other suitable protection may be necessary.

Form 6.7
Protection Against Vehicular Impact

#	System Protected	Is physical protection provided?		Type of physical protection installed	NFPA 58 Section Reference (2017 Edition)		
		Yes	No				
1	Storage containers	X		Posts or Jersey barriers			
2	Transfer stations	X		Posts or Jersey Barriers	6.6.1.2, 6.6.6.1(B), 6.6.6.1(C), 6.9.3.10, and 6.25.3.13		
3	Entryway into plant	X		Locked gate	0.5.5.10, and 0.25.5.15		

<sup>2.</sup> Refer to Chapter 8 for a discussion on NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection

#### **CHAPTER 7**

# **Exposure To and From Other Properties, Population Density**

# 7.1 Exposure to Off-Site Properties and Persons From In-Plant Propane Releases

<u>Types of Propane Fires</u>: A propane release inside the LP-Gas facility may affect adjacent properties and off-site populations if the release is of a sufficiently large size. An immediately ignited release will result in a local fire. Depending upon the characteristics of the release and ignition two types of local fires can occur, namely, a pool fire on any liquid pool of propane on the ground or a burning rising fireball.

If the released propane is not immediately ignited, then a dispersing cloud (or plume) of vapor will form. The cloud or plume will move in the direction of the wind. Because of the mixing of air with the dispersing propane, propane concentration decreases continuously both with downwind distance as well as in the crosswind direction. This cloud or plume can be ignited at any distance downwind by an ignition source when the concentration at the point of ignition is within the Lower Flammability Limit (LFL) to Upper Flammability Limit (UFL) range. For propane the range of flammable concentrations in air is between 2.15% and 9.6% by volume.

Ignition of a dispersing vapor cloud or plume may result in a flashback type of vapor fire. In extremely rare cases, and only when the physical conditions are conducive, with partial or full confinement of the propane-air mixture of proper concentration and its ignition, a vapor explosion can occur, resulting in a blast wave. If the dispersing cloud is not ignited it poses no hazard to the surrounding area.

Propane vapor at ambient pressure and temperature is heavier than air. Hence, any vapor released will tend to flow towards and accumulate in low-lying areas adjacent to the release location. If a building or other semi-confined area exists adjacent to the release location wherein the vapor can accumulate in the lower parts of the building, a potential explosion hazard will result.

**Hazardous Effects of a Fire**: The effect of a propane fire on an off-site property will depend on the type and material of construction of the structure and its distance from the fire and fire size. Similarly, the number of off-site persons adversely impacted by a fire inside a LP-Gas facility will also depend on, (in addition to the characteristics of the fire and the distance between the fire and the population) the type of population, the timeliness of notification, the effectiveness of the evacuation planning and implementation, etc.

**Release Cases**: In this manual, a number of mathematical models were developed for credible accident scenarios, to describe the effects of the release of propane inside LP-Gas facilities and its subsequent behavior. These models were used to calculate potential hazard areas for each scenario of release. Each potential release discussed has very low probability of occurrence. However, because of the flammability of propane, such releases may pose hazards. The hazard distance (to a

property outside the facility boundary or to off-site persons) from a propane release within the facility will depend on the size and duration of release, and the type of fire that occurs.

The calculated distance to which a hazard extends under each scenario of release and for each hazard behavior is indicated in Table 7.1.

To assess the hazards posed to offsite population from in-plant releases of propane it is necessary to:

- 1. Note the type of occupancies surrounding the facility, and
- 2. Describe in detail the characteristics and density of the population surrounding the facility.

To evaluate the impact on the surrounding population from an in-plant propane release, complete Form 7.2 using the results indicated in Table 7.1.

Table 7.1
Distances to Various Types of Propane Hazards Under Different Release Models\*\*

Model #	Details of the Pro Releases f	Vapor Dispersion Distance to LFL (ft)	Explosion Hazard Distance (ft)	Fire Ball Radiation Distance (ft)	
1a	Bobtail hose failure.	1" ID x 150 ft hose length	250	110	50
1b	Release of the entire inventory in the hose,	1" ID x 120 ft hose length	230	103	45
1c	quickly.	1" ID x 75 ft hose length	190	90	40
2a		Release of the inventory in a transfer piping 1" x 30 ft @ 20 gpm for 10 min., due to failed excess flow valve.			
2b		Release of the inventory in a transfer piping 2" x 30 ft			48
2c	Release of the inventory in @ 70 gpm for 10 mins.	328	235	74	
2d	@80 gpm for 10 mins.	Release of the inventory in a transfer piping 2.5" x 30 ft		252	59
2e	Release of the inventory in @100 gpm for 10 mins.	a transfer piping 3" x 30 ft	312	287	69
2f	Release of the inventory in @100 gpm for 10 mins.	a transfer piping 3" x 18 ft	256	284	55
2g	Release of the inventory in @100 gpm for 10 mins	a transfer piping 3" x 80 ft	455	284	106
2h	Release of inventory from 200 gpm for 10 minutes	Release of inventory from transfer piping 4" x 30 ft. +		410	89
3	Release from the container	No ignitable ground level	vapor concen	tration at	
4	Release from a 1" ID x 150 ft transfer piping to a vaporizer and reduced flow from a partially open excess flow valve @ 20 gpm for 10 min.		250	120	50
5		e in a transfer pipe at a back	110	120	5

	pressure of 130 psig (corresponding to 80 °F) for 60 min. Hole size is 1/4" ID.			
6a	Release of the entire inventory in a 2" ID x 20 ft., transfer hose.	195	90	40
Model #	Details of the Propane Release Model Releases from or due to	Vapor Dispersion Distance to LFL (ft)	Explosion Hazard Distance (ft)	Fire Bal Radiation Distance (ft)
6b	Release of the entire inventory in a 2.5 inch dia. transfer hose x 16 ft. length	215	98	45
6c	Release of the entire inventory in a 3-inch dia. transfer hose x 12 ft. length	230	100	46
6d	Release of the entire inventory in a 1.25-inch diameter transfer hose x 20 ft. in length	138	66	27
7a	Transport hose blow down: Hose size 2" ID, 20 ft length release for 3min., from a Transport after the tank is filled.	25	30	<5
7b	Transport hose blow down: Hose size 2.5" ID, 16 ft length release for 3min., from a Transport after the tank is filled.	25	29	<5
7c	Transport hose blow down: Hose size 3" ID, 16 ft length release for 3min., from a Transport after the tank is filled.	31	36	<5

<sup>\*\*</sup> Results from models described in Appendix B.

Form 7.1

Types of Occupancies<sup>(1)</sup> Near or Surrounding the LP-Gas Facility

Type of Occupancies	Model # from Table 7.1	Hazard Distance <sup>(2)</sup> (feet)	Is Occupancy located within the hazard distance from the Facility?		
			Yes	No	
Assembly Occupancies (Places of worship, Libraries, Theaters and Auditoriums, Food or Drink Bars, Sports Stadiums, Amusement Parks, Transportation Centers, etc. with 50 or more people).				X	
Institutional Occupancies (Elderly Persons Home or Nursing Home, Hospitals, Alcohol & Drug Rehabilitation Centers, Prisons)				X	
Educational Occupancies (Elementary Schools, Day Care facilities, etc).				X	

NOTES: (1) Different types of occupancies are defined in NFPA 5000

<sup>(2)</sup> Table 7.1 provides a number of scenarios that can result in propane release, and the resulting area exposed for different ignition mechanisms. Determine the scenarios that are applicable to the facility, for the quantities that can be released, and enter the greatest value from Table 7.1. Use the hose diameters and length that will be used at the facility if they differ from the ones in Table 7.1 and recalculate the hazard distances using a spreadsheet method that is available at npga.org. Some scenarios may not be applicable to an installation because of other mitigation measures implemented, such as a hose management procedure to minimize the possibility of hose failure.

## 7.2 Exposure to the Propane Facility From External Events

A large fire or an explosion occurring outside the plant boundary may have detrimental effects on the plant equipment, containers or electrical systems. The most likely scenario is that the LP-Gas plant equipment is affected by intense heat radiation from the external fire.

In order to assess the effects on in-plant personnel, equipment, containers and safety systems from exposure to off-site hazards it is necessary to:

- Identify industrial or other operations surrounding the LP-Gas plant and also note the type of occupancies surrounding the plant;
- Discuss with owners of facilities or operations surrounding the LP-Gas plant any potential detrimental effect due to their presence or operations upon the LP-Gas plant;
- Implement suitable precautions and develop quick notification or other effective communication system protocol between the LP-Gas plant and its neighboring industrial plants, to minimize the potential detrimental effects on a proposed LP-Gas plant from surrounding operations.

The description of the LP-Gas plant surroundings was specified in Form 4.2. Form 7.2 should be completed as a part of the Fire Safety Analysis to note any outside hazards that may affect the integrity of the LP-gas system.

Form 7.2 Exposure to LP-Gas Facility from External Hazards

A	В	C	D	
Item #	Type of Neighboring Operation	Hazard exists to the LP-Gas Facility		
		Yes	No	
1	Petroleum and other hazardous material storage, wholesale dispensing, etc.		N/A	
2	Metal cutting, welding, and metal fabrication	N/A	N/A	
3	Industrial Manufacturing that can pose external hazards	N/A	N/A	
4	Ports, rail yards and trans-shipment terminals handling flammable and explosive materials.	N/A	N/A	
5	Other operations that may pose hazards (gasoline and other hazardous material dispensing stations, fertilizer storage, etc).	N/A	N/A	

NOTE: If a particular activity indicated in column B does not exist, fill both "Yes" and "No" columns with "NA."

Where a "Yes" has been checked in either Form 7.1 or Form 7.2:

- 1) For an existing facility, communicate this information to local emergency responders for inclusion in their emergency planning.
- 2) For a proposed facility, implement the actions indicated in Chapter 9.

External Fire Effects on LPG Containers: An evaluation of the effects of thermal radiation from fires outside the facility on LP containers in the LPG plant was conducted to provide guidance to those using this manual. (This evaluation, the associated mathematical model and detailed results with and without the effects of wind have been published in a peer reviewed technical journal)<sup>1</sup>. The maximum temperature attained by the vapor-wetted wall of a propane container exposed to heat radiation from an external, non-impinging fire was calculated for various sizes of containers. The assumptions made in regard to the size and location of the external fire included the following:

- The fire used in the model was a highly radiative liquid hydrocarbon pool fire. The value assumed for the heat radiation emanating from this liquid pool fire was greater than that from fires occurring due to the burning of wooden buildings, tires, forest trees, and other flammable liquids such as oil fires, which burn with high degree of smoke production.
- A fire diameter of 100 ft (30.5 m) was used for duration of 30 minutes. This is a very large fire.
- The edge of the fire was located at distances to buildings required by Table 6.3.1.1 of NFPA 58 and consistent with the size of the container nearest to the plant boundary.
- Convective cooling of the heated surface and the effects of reflective paint on the containers were included.
- Bending of the fire plume towards the containers due to the effects of wind was also included.

The maximum temperatures calculated for the steel surface of the container in contact with vapor in different size containers were as follows:

	Maximum
Container Size	Temperature
Gal. (W.C.)	attained in
Gai. (W.C.)	30 min
	exposure
1,000	660 °F
2,000	648 °F
4,000	507 °F
12,000	507 °F
18,000	437 °F
30,000	384 °F
60,000	340 °F

Raj, P.K., "Exposure of a liquefied gas container to an external fire," Journal of Hazardous Materials, v122, Issues 1-2, p 37-49, June 2005.

The temperature at which the yield strength of steel of a propane tank begins to decrease is close to 800 °F. Based on this, there is no threat of propane tank failure from thermal radiation from an external fire occurring at the minimum separation distances specified in Table 6.3.1.1 of NFPA 58.

#### **CHAPTER 8**

## **Evaluation of Fire Services and Water Supply Requirements**

In this chapter the procedure for evaluating the capability and resources of the local fire department (FD) that would respond to an emergency at the LP-Gas facility is discussed. This evaluation includes the training of FD personnel, availability of suitable fire apparatus and equipment, and determination of water requirements if such a system were to be installed at the facility.

#### 8.1 Details of the Fire Service

Use Form 8.1 to record the relevant data on personnel and resources from the local FD or fire company that is responsible for the area where the LP-Gas facility is located. This is a good opportunity to establish a working relationship with the fire department as you will need their support as you go forward with this planning and evaluation process and they will need to understand the facility to provide maximum assistance should an incident occur at the facility.

Analyzing the data from Form 8.1: The designation of the fire fighters as career personnel or volunteers has no bearing on the expertise of the department. The purpose of items 4 and 5 in Form 8.1 is to help determine how fast the initial help might be available. Career fire fighters are in the station and available to respond. Volunteer fire fighters may have to come from home or their place of business. Career fire fighters can normally have a piece of fire apparatus responding within one minute of receiving the call, volunteers may take 4-5 minutes to reach the station before they can respond.

Item # 6 helps determine the level of skill of the fire fighters in the fire department. NFPA 1001, Standard for Fire Fighter Professional Qualifications, defines the expertise required of a fire fighter to be qualified to Levels I and II. A Level I fire fighter can do general fire fighting tasks under close supervision and a Level II fire fighter can do those and more tasks under general supervision.

Item # 7A is critical to determining if an effective operation can be conducted. For fighting a fire, at least two fire fighters are required for each 125 gpm hose line used. In addition, an incident commander, a safety officer, additional supervisory officers (depending on the size of the incident), and an operator for each piece of fire apparatus that is being used (pumping or performing some other function) is required. Also required is a rapid intervention crew (RIC) of 2 fire fighters when the first firefighting crew is deployed into a hazardous area, with that team growing to 4 fire fighters when the second and subsequent crews enter the hazardous area. The role of the RIC is to perform a rescue of one or more fire fighters that may be injured during the operation.

Item # 7B and Item # 7C help determine the training and knowledge of the fire fighters in hazardous materials and the specific hazards of LP-Gas. NFPA 472 is Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.

Form 8.1

Data on the Responding Fire Department

A		В	C
Item #		Data Item	Data Entry
1	Name of the Fire Departm	Imperial County Fire Department	
2A	Name of the person in the	FD assisting with the data acquisition.	Andrew Loper
2B	Position of the person in th	ne FD assisting with the data acquisition.	Fire Prevention Specialist
3A	Date on which FD data wa	s collected.	04-08-2022
3B	Name of the person collect	ting the data.	Andrew Loper
4	Number of fire fighters on	duty at any time.	3
5	Average number of fire fig	3	
6A	Number of fire fighters	"Fire Fighter I" level.	
6B	qualified to	"Fire Fighter II" level.	3
7A		Respond on the first alarm to the facility.	4
7B	Number of fire fighters who would:	Respond on the first alarm and who are qualified to the operations level requirements of NFPA 472 or similar local requirements	4
7C		Respond on the first alarm with specific knowledge and training on the properties of LP-Gas and LP-Gas fires.	N/A
8A	Number of fire apparatus that have the capability to deploy a 125 gpm	Are in service in the department.	27
8B	hose line supplied by onboard water for at least 4 minutes, and, which:	Would respond on a first alarm.	1

Item # 8A and Item # 8B help determine the capability of fire apparatus that will or could respond to an incident. A 125 gpm hose line is a typical hose line used for firefighting where the fire fighters are expected to advance and maneuver the line while it is flowing.

Response time: Another important consideration of the effectiveness of the Fire Department to respond to an incident is the time it takes the FD to reach the LP-Gas facility. Many fire departments have multiple fire stations or use mutual aid fire companies from other communities to assist them so resources are coming from different locations. It is therefore important to determine the total time for not only the first arriving apparatus but for subsequently arriving apparatus dispatched on the first alarm as well. You will need to work with the fire department and gather this information as well.

Using Form 8.2, determine the time for all resources that would be dispatched on the first alarm to an emergency at the facility. Start by identifying and listing in column A the fire companies that would respond on a first alarm to an emergency. Then, for each company record the time it would take to receive and handle an alarm, for the company to turnout, and the time to respond. If the fire department does not have data that can help, some good averages to use are:

- Alarm Receipt & Handling Time 1 minute for the fire department first receiving the alarm and 3 minutes for mutual aid fire departments,
- **Turnout Time** 1 minute if the apparatus is staffed by career fire fighters and 4 minutes if the apparatus is staffed by volunteer fire fighters,
- Travel Time 2 minutes for each mile the fire apparatus must travel in an urban/suburban setting and 1.5 minutes for each mile the fire apparatus must travel in a rural setting.

Total the times in columns B, C, and D for each company and enter the sum in Column E. This response time will give you an idea of how long it will take resources to reach the facility gate. Fire fighters must then determine the nature and severity of the emergency, determine how they are going to deal with the emergency, maybe establish a water supply from a hydrant or other source, and implement their attack. This can take anywhere from a couple of minutes to upwards of 30 minutes.

## 8.2 Water Needs and Availability

The requirements for water to cool a container exposed to a fire are indicated in NFPA 15. A flow rate of 0.25 gpm/ft<sup>2</sup> (10 liter/min/m<sup>2</sup>) is specified as being adequate to cool a LP-Gas container exposed to a fire. Since a majority of the containers in the LP-Gas facilities have container penetration for liquid inflow or liquid outflow at only one end of the container and since any product leak occurring at one end and a subsequent fire will affect only the end zone of a container, it has been assumed that the container surface within only one half length of the container needs to be cooled for an effective prevention of damage to the container. Also, calculate the total volume of water required on the basis of a stream flow time of 10 minutes.

Based on these parameters and the surface area of various size ASME containers, the cooling water rate requirements for each container size are determined using Form 8.3. Complete Form 8.3 with information relevant to the facility. Start by identifying the largest container at the facility. Assume that a fire occurs at the end of that container where the appurtenances for

product inflow and outflow are located, and determine whether other containers are within 50 feet of this largest container.

Identify the largest container at the facility and all stationary containers within 50 feet of the largest container. Record in column F of Form 8.3 the largest container. Next, record in Column F the two containers that are within 50 feet of the largest, **and** which have the most surface area exposed to the end of the largest container at which the appurtenances are installed. These are the containers, which are most likely to be affected by a fire occurring at the appurtenances of the largest container. Multiply the number of containers recorded in Column F by the required water flow rate per container in Column E and enters the result in Column G. Sum the values in Column G and enter the sum in Cell 2a, Column G. Round this number up to the next multiple of 125 (i.e. 725 gpm would round up to 750 gpm). This is done because the application of water by the fire department is generally going to be in increments of 125 gpm. Enter that figure in Cell 2b, Column G.

You have now determined the application rate for cooling water that is necessary if the largest container is subjected to fire. Add 250 gpm (Cell 3, Column G) for use by fire fighters to protect personnel when approaching the container or its valves to control the flow of product. Sum the numbers in Cells 2b and 3 of Column G. Enter that number in Cell 4, Column G.

To determine the total volume of water required for a 10-minute application time, multiply the total water flow rate in Cell 4, Column G by 10 and enter that figure into Cell 4, Column H.

Form 8.2
Response Time data for the Fire Departments

A	В	C	D	E			
	Time in Minutes for						
Company or Department	Alarm Receipt & Handling	Turnout	Travel	Total Time			
ICFD Station 9	N/A	1.34	5.00	6.34			

Note: Number in Column E = Sum of numbers from Columns B through D.

Form 8.3

Water Flow Rate and Total Water Volume Required to Cool Containers Exposed to a Fire

A	В	C	D	E	F	G	Н
Item #	ASME Container Size (gallons)	Total Surface Area of each Container <sup>1</sup> (ft <sup>2</sup> )	Surface Area of each container to be Cooled (ft²)	Water flow rate required per container (gpm)	Number of containers of the size indicated?	Total Water flow rate required (gpm)	Total volume o water required for 10 min (gal)
	500	86	43	10.8	0		080900 in
	1,000	172	86	21.5	0		218/01/21
	2,000	290	145	36.3	0		A ready .
	4,000	374	187	46.8	0		Enthalte.
	6,500	570	285	71.3	0		Service Line
	9,200	790	395	98.8	0		THE STA
1	12,000	990	495	123.8	0		entiti
	18,000	1,160	580	145.0	0		Hillian The
	30,000	1,610	805	201.3	1	203.1	Sikily
	45,000	2,366	1,183	295.8	0		5 . 15
	60,000	3,090	1,545	386.3	0		
	90,000	4,600	2,300	575.0	0		
	Other Size						1 - 1 - 1 - 1
2a	Calculated was	ater flow rate for tection	and in rail or all	and sent non	have out the risk	203.1	
2b	Water flow ra	ate rounded up to ole of 125					
3	Water for fire protection, if					250	
4	Total water fl volume	ow rate and				453.1	4531.00

**Note:** Column  $D = (1/2) \times Column C$ 

Column  $E = 0.25 \text{ (gpm/ft}^2) \times \text{Column D}$ ;

Column  $G = Column F \times Column E$ 

Column H = 10 x Column G

Line 2a, Column G and Column H are the sum of numbers in each row above line 2 of each column.

Line 4, Column G and Column H are the sum of numbers in rows 2b and 3.

- Consider only 3 containers for water supply evaluations even if the number of containers in a group is more than 3. See Section 8.2.
- 1 ASME container approximate dimensions

The total water requirement for the facility is indicated in item 4, column G (water flow rate) and column H (total water volume or quantity) of Form 8.3. If multiple groups of containers are present in the facility, repeat the calculations in Form 8.3 for each group of containers. The total water requirement for the facility is the largest value for any single group of containers.

EEC ORIGINAL PK\$

#### Water Availability Evaluation

If a water system is installed, Form 8.3 calculates the total water requirement for a 10-minute duration. This time period allows for manual shutdown, rescue of any injured, and the possibility of dispersing unignited gas.

If there is a public or private water supply with hydrants available within 1000 feet of the container or containers on which water will be applied, determine the available flow rate from that system with 20 psi residual pressure. The water company may have flow test data or it may be necessary to conduct flow tests. If that flow rate is equal to or greater than the needed flow rate determined using Form 8.3, you can assume your water supply is adequate. If the hydrant flow rate is less than the needed flow rate, determine what other sources of water are available. Sources fall into two categories: water on fire apparatus responding to the incident, and water in rivers, ponds or lakes near the facility. Start by talking with the fire department about whether they have a tanker shuttle capability. Some departments have well-organized operations that can deliver 250 gpm or more on a continuous basis using tanker shuttles. This may be the only capability available or it may be a supplement to a weak hydrant system. Be sure to determine how long it would take to get the water shuttle established.

If there is a river, pond or lake in the area, the fire department may be capable of drafting from that water source and pumping water through hose lines to the facility. There are a number of things that need to be considered before relying on this type of water supply.

- 1. Can a fire apparatus get close enough to the water source to reach the water with the suction hose it carries (normally 20 feet) and not have the lift (distance from the surface of the water to the center of the pump) greater than 10 feet?
- 2. Is the water source available year round? Does it dry up in the summer or freeze in the winter? The strainer on the suction hose needs to be at least 2 feet below the surface of the water.
- 3. Is the water source of adequate size or flow to supply the water needed?
- 4. Does the fire department have the hose and pumping apparatus to relay the water from the source to the fire?
- 5. How long will it take to set up this relay?

These factors should be evaluated and discussed with the fire department before any decision is made to use such a supply. It might also be useful to have the fire department conduct an actual timed drill to deliver the needed water supply to the facility site using the normally responding complement of personnel and equipment.

Complete Form 8.4 to document the water supply that will be available to the facility site.

Form 8.4

Evaluation of Water Availability in or Near the LP-Gas Facility

A	В		С	D			
Item #	Water from	Ava	ilable?	e? Quantitative information		ation	
1	Public supply or from another piped-in supply through one or more fire hydrants in or near the	ed-in supply through one or		Hydrant data	Distance from Container(s) on which water will be applied (feet)	Available water flow rate from all hydrants <sup>(1)</sup> (gpm)	
	facility			Hydrant 1	800	1250	
				Hydrant 2	Aprox 1000		
				Hydrant 3	0		
	A nearby static water source (stream, pond, lake, etc).				Distance to	water source =	0 Feet
2		☐ Yes	X No	Time to set up relay = 0 min.			
				Rate of delivery = 0 gpm			
3	Only through mobile water tanker shuttle.	□ Yes	X No	Time to set up shuttle = 0 min. Sustainable flow rate = 0 gpm			

<sup>(1)</sup> Obtain the available flow rate from the local municipal water authority or the entity that supplies water to the hydrant or conduct a test to determine total available flow rate.

Having the water available does not guarantee that the fire department has the resources to apply the water in a timely manner. Completed Form 8.2 will indicate how much time it will take for the fire department to have initial resources at the facility and how long before additional resources will be on-site. If the capability to apply cooling water within the first 10 minutes of initial fire exposure to the container is not present, extremely dangerous conditions could begin to develop. Note that it will take several minutes after the apparatus arrives at the facility gate before cooling water is actually applied to the containers and that hand held hose lines will be used with water supplied from the water tank on the apparatus. Even if hydrants are available, the staffing on the first arriving fire apparatus will probably not be sufficient to establish a water-supply from the hydrant. Depending on the hydrant system and the fire department's standard operating guidelines, it may be necessary to connect a pumper to the hydrant. If the distance is over 1000 ft. it may also be necessary to use hose from more than one fire apparatus to reach the hydrant and in some cases, to use intermediate pumpers in the hose line to boost the pressure.

Form 8.1 contains information on responding apparatus capable of applying 125 gpm for 4 minutes. This is adequate to begin operations for a single container of 30,000 gallons or less water capacity if no other adjacent containers are exposed to the fire. However, a continuous water supply then has to be established within that 4 minutes or other apparatus must be available with onboard water to continue the cooling until a continuous water supply is set up. A larger facility or multiple containers exposing each other is a different situation. In those cases, cooling water may need to be applied using larger hand held hose lines or ground monitors to achieve the reach necessary with the water stream. Both of these require considerably more water than may be supplied by 125 gpm hose lines. Unless a hydrant system with an adequate flow rate is readily available, the time needed to establish an adequate water supply from remote hydrants, a relay operation from a static water source, or a sustainable tanker shuttle operation will greatly exceed the initial 10 minutes of fire exposure to the container and dangerous conditions could begin to develop. For these facilities, a fixed water spray system is the only practical means by which adequate protection can be provided to installations consisting of multiple 30,000 gallon or larger containers.

Using the data you have gathered, it is recommended that you discuss with the fire department the resources available to protect the facility. This would include evaluating the knowledge and training of the fire fighters who would be arriving at the facility.

- 1) For an existing facility, communicate this information to local responders for inclusion in their emergency planning.
- 2) For a proposed new facility, refer to Chapter 9

### **CHAPTER 9**

# **Evaluation Summary for a Proposed New LP-Gas Facility**

In this chapter the results of analyses performed in Chapter 4 through Chapter 8 for a proposed (new) LP-Gas facility are summarized. If noncompliance with NFPA 58-2017 is found, the design must be altered to bring the proposed facility into compliance. In some cases, several alternative approaches for complying with the code are presented.

Complete Form 9.1, Form 9.2 and Form 9.3 (and if necessary, Form 9.4 and Form 9.5) and implement any necessary changes to the design to bring the new facility into compliance with the code.

Form 9.1

Analysis Summary on Product Control and Local Conditions of Hazard

A	В	C	D	E
Item #	CHAPTER Title	Section & Title	Reference FORM #	Number of "No" checked
		5.1: Product Control in Containers	5.1 or 5.2	0
	Product Control Measures in		5.3	0
1		5.2 Product Control in	5.4	0
	Containers & Transfer Piping	Transfer Piping	5.5	0.
1		Transfer Figure	5.6	0
			5.7	0
	Analysis of Local Conditions of Hazard	6.1 Physical Protection Measures	6.1	0
		6.2 Ignition Source Control	6.2	0
2		6.3.1 Separation distances; Container and outside exposures	6.3	0
		6.3.2 Separation distances; Transfer points and outside exposures	6.4	0
		6.4 Special Protection	6.5	0
		Measures	6.6	0

<sup>§</sup> The number of "No" for Forms from Chapter 5 is the difference between the required number of appurtenances according to NFPA 58-2017, and a lesser number found to be actually installed on the container or the transfer piping.

If, in any row of column E ("No") of Form 9.1, the entry number is greater than zero, the proposed LP-Gas facility is not in compliance with the requirements of NFPA 58-2017 for product control appurtenances or other safety measures. The design of the proposed facility must be modified to conform to the code requirements. In addition, the following items should be noted.

- If there are any "No" checks in Form 6.3, then the separation distance requirements for containers are not satisfied. An option that may be considered is the reduction in separation distance to 10 feet for underground and mounded containers by providing "Redundant and Fail-Safe Product Control Measures." In this case, complete Form 9.4 below to ensure that each requirement of "Redundant and Fail-Safe Product Control Measures" is provided.
- If there are any "No" checks in Form 6.4, then the separation distance requirements for transfer points are not satisfied. In this case, relocate the transfer points so that the separation distances conform to the code requirements or provide the Low Emission Transfer Equipment. Complete Form 9.5 below and ensure that all requirements for Low Emission Transfer Equipment are fulfilled.

Form 9.2

Analysis Summary on Exposure from and to the LP-Gas Facility

A	В	C	D —	E
Item #	CHAPTER Title	Section & Title	Reference FORM #	Number of "Yes" checked
Exposure to and from Other		7.1 Exposure to off-site properties and persons from in-plant propane releases	7.1	0
	Properties	7.2 Exposure to propane facility from external events.	7.2	0

If the entry number in column E ("Yes"), Form 9.2 corresponding to Form 7.1 is greater than zero, consider one or more of the following design alternatives.

- 1 Consider moving the container or the transfer point to a different location, if possible and space exists, so that the property or the person is beyond the hazard distance.
- 2 Provide "Redundant and Fail-safe Product Control Measures". Complete Form 9.4 to ensure compliance.
- 3 Institute other technical measures such as installing gas and flame detectors (connected to facility shut down systems), sounding alarm outside facility premises, etc.
- 4 Institute administrative controls such as additional training for personnel, more frequent inspections of hoses and transfer piping, etc.

If the entry number in column E ("Yes"), Form 9.2 corresponding to Form 7.2 is greater than zero, consider one or more of the following design alternatives.

- 1 Implement procedures to monitor neighboring activity.
- 2 Install means in the adjacent plant to shut down the LP-Gas plant in case of an emergency in that plant.

Form 9.3
Analysis Summary on Fire Department Evaluations

A	В	C	D	E	F
Item #	CHAPTER Title	Section & Title	Reference FORM #	Number "zeros" entered in Column C, Lines 6 through 8 of Form 8.1	Number of "Yes" checked in Column C of Form 8.4
1	Fire department capability, adequacy	8.1 Data on the Fire Department	8.1	0	
2	of water supply and Emergency Planning	8.2 Fire response water needs and availability	8.4		1250

If the entry number in row 1, Column E of Form 9.3 is greater than zero, consider one or more of the following design alternatives.

- 1 Discuss with the local Fire Department the needs of the LP-Gas facility and the evaluation results on the capability and training inadequacies of the Department.
- 2 Consider developing a cadre of personnel within the LP-Gas facility to respond to emergencies.
- 3 Institute container special protection system based on active protection approaches or passive approaches. Complete Form 9.6 and Form 9.7 below.

If the entry number in row 2, Column F of Form 9.3 is equal to zero, consider one or more of the following design alternatives.

- 1 Provide special protection (other than water spray or monitor systems) to containers, satisfying the requirements of section 6.27.5 of NFPA 58, 2017 edition. Complete Form 9.6 to ensure compliance.
- 2 Consider implementing the various options indicated in Table 9.1.

Form 9.4
Redundant and Fail-Safe Design for Containers

A	В		C	D	E	F
Item	Description		Features		sed for acility?	NFPA 58 Section
#	•			Yes	No	Reference (2017 Edition)
1	Container sizes for which the appurtenances are provided		Appurtenances and redundant fail-safe equipment are provided for each container of water capacity 2,001 gal through 30,000 gal	X		6.28.3 and 6.28.4
	Liquid or vapor w		Internal valve having internal excess flow valve	X		6.28.3.1 and 6.28.3.2
2	(1-1/4 in. or large	r)	Positive shutoff valve installed as close as possible to the internal valve	X		6.28.3.4
	Liquid or vapor inlet		Internal valve having internal excess flow valve or Backflow check valve	X		6.28.3.5
3			Positive Shutoff Valve installed as close as possible to the Internal Valve or the back flow check valve	X		6.28.3.5
	Railcar transfer	Flow into or out of railroad tank car	Emergency shutoff valve installed in the transfer hose or the swivel-type piping at the tank car end.	N/A	N/A	6.19.2.6 (1) and 6.28.4.1
4		Flow only into railroad tank car	Emergency shutoff valve or backflow check valve installed in the transfer hose or the swivel-type piping at the tank car end.	N/A	N/A	6.19.2.6 (2) and 6.28.4.1
5	Cargo tank transfe	er	Protection provided in accordance with 6.28.4.1	X		6.28.4.1
	Automatic closure	e of all	By thermal (Fire) actuation	X		6.28.4.2
6	primary valves (IV in an emergency	V & ESV)	Actuated by a hose pull-away due to vehicle motion	X		6.28.4.2
			Remote shutdown station within 15 ft of the point of transfer?	X		6.28.4.3 (A)
7			Another remote shutdown station between 25 ft and 100 ft of the transfer point?	X		6.28.4.3 (B)
	Manually operated remote shutdown of IV and ESV		Shutdown stations will shut down electrical power supply to the transfer equipment and all primary valves (Internal and Emergency Valves)	X		6.28.4.3
			Signs complying with the requirements of 6.28.4.3 (C) provided?	X		6.28.4.3 (C)

Note: If your facility does not have a rail terminal, write the word NA in both the "Yes" column and the "No" column in item 4 of the form in the railroad tank car row. Similar option is also available if there is no cargo tank vehicle transfer station.

Form 9.5
Evaluation of Low Emission Transfer Equipment

A	В	C		D	E	F
Item #	Description	Features		Proposed for the facility?		NFPA 58 Section Reference
				Yes	No	(2017 Edition)
1	Transfer into permanently mounted ASME containers on vehicles	Delivery nozzle and filler valve-max. liquid release after transfer of 4 cm <sup>3</sup> (0.24 in <sup>3</sup> ).  Fixed maximum liquid level gage not used during transfer operations		X		6.28.5.3 (A) & (B)
Transfer int stationary ASME cont delivery valuezzle	Transfer into stationary ASME containers	During product transfer or post transfer uncoupling	Does not exceed 4 cm³ (0.24 in³) from a hose of nominal size 1 in or smaller	N/A	N/A	6.28.5.4 (A)
	delivery valve and nozzle combination	nozzle product volume	Does not exceed 15 cm <sup>3</sup> (0.91 in <sup>3</sup> ) from a hose of nominal size larger than 1 in.	X		6.28.5.4 (B)
3	Transfer into stationary ASME containers		an 2,001 gal (w.c.) have tion device or another	N/A	N/A	6.28.5.4 (F)
	maximum filling limit		Do containers 2,001 gal (w.c.) or greater have a float gage or other non-venting device?			6.28.5.4 (E)
4	Transfer into stationary ASME containers fixed maximum liquid level gage	Not used during routine transfer operations but may be used in calibrating other non- venting liquid level gauges in the container		X		6.28.5.4 (C) & (D)

Note: If the facility does not have a particular feature described in items 2 or 3, write "NA" in both the "Yes" and "No" columns corresponding to its row.

Form 9.6 Special Protection Measures – Passive Systems

A	В	В		D	E NFPA 58 Section Reference (2017 Edition)
Item	Special Protection	Question	Proposed for the facility?		
#	Option Option	Question		No	
		Insulation provided on each of the containers?		X	6.27.5.1
1	1 Container insulation	Insulation material complies with the requirements of NFPA 58?	N/A	N/A	6.27.5.1 and 6.27.5.2
2	Mounding of	Each container in the facility is mounded?	N/A	N/A	6.27.5.3
2	containers	Mounding complies with each requirement under section 6.6.6.3 of NFPA 58.	N/A	N/A	6.6.6.3 and 6.27.5.3
3	Burying of containers	Each container in the facility is buried?	N/A	N/A	6.27.5.4
		Buried containers comply with each requirement under section 6.6.6.1 of NFPA 58.	N/A	N/A	6.6.6.1 and 6.27.5.4

Form 9.7 Special Protection Measures – Active Systems

Item #	Special Protection	Question		Facility bliant?	NFPA 58 Section
	Option	Question	Yes	No	Reference (2017 Edition)
		Are fixed water spray systems, complying with NFPA 15 requirements, used for each container in the facility?		X	6.27.6.1
1	Water spray systems	Do fire responsive devices actuate water spray system automatically?	N/A	N/A	6.27.6.2
		Can the water spray systems be actuated manually also?	N/A	N/A	6.27.6.2
	Monitor nozzle	Are the monitor nozzles located and arranged so that the water stream can wet the surfaces of all containers exposed to a fire?	N/A	N/A	6.27.6.3
2		Can the water stream from a monitor nozzle reach and wet the entire surface of, at least, one half of a length from one end of each of the containers it is designed to protect?	N/A	N/A	6.27.6.3
	systems	Do fixed monitor nozzles comply with NFPA 15 requirements?	N/A	N/A	6.27.6.1
		Do fire responsive devices actuate the monitor nozzles?	N/A	N/A	6.27.6.2
		Can the monitor nozzles be actuated manually also?	N/A	N/A	6.27.6.2

### Equivalent Protection to a Water Supply for Industrial and Bulk Facilities

In the case where water supply is not available in or near the LP-Gas facility, or is inadequate or it is prohibitively expensive to connect to a public or private water supply hydrant, alternative methods for providing protection should be considered. In lieu of providing a water supply, several alternatives are indicated in Table 9.1, which can offer an equivalency to a water supply system.

The intent of the controls identified in Table 9.1 is to maintain the entire system as a gas tight entity. These methods include reducing the service life of equipment, increasing the design pressure rating of the system beyond the requirements of NFPA 58, or providing early detection and isolation of the system to ensure product control. This list is not exhaustive and is not ranked in an order of priority.

Table 9.1
Suggested Alternative Methods for Industrial and Bulk Plants That Do Not Pose a
Hazard But Lack a Water Supply

Item #	Possible options to implement when adequate water supply is not available
1	Reduce the service life of hoses.
2	Increase frequency of equipment inspection.
3	Establish a service life program for the maintenance of the container pressure relief devices. This could include the installation of a listed multiple port valve and certifying that the relief devices are properly set and maintained every 5 to 10 years.
4	Increase the design strength of the piping and fitting systems.
5	Install emergency shutoff valves in conjunction with container internal valves.
6	Install emergency shutoff valves downstream of transfer pump outlets and upstream of the vapor and liquid valves at the bulkhead.
7	Install pneumatic tubing along the facility boundary to serve as a perimeter fire detection system. This would provide protection of the facility against exposure fires.
8	Provide optical flame detection or linear heat detection, or a gas detection system connected to an isolation valve installed downstream of every liquid and vapor nozzle on the container. This system could also be monitored to send a signal to an alarm company that notifies the fire department of an event.
9	Increase the separation distances of internal facility exposures to the container. These exposures would include a site dumpster, idle or waste pallets and combustibles, and increasing the parking distances between the bobtails and transports in relation to the container.
= 10	Relocate overhead power lines away from all container and cylinder storage areas to protect against ignition in the event of a line dropping due to wind or power pole impact.
11	Eliminate all combustible vegetation within 30 feet of the LP-Gas container. This can be accomplished using gravel, or paving the site yard.
12	Install tanks using the mounding or burial method.

# Interactive Appendix A Fill-in Forms (2017 Edition of NFPA 58)

This Appendix contains a set of forms copied from the different chapters in this manual. The form number corresponds to the respective forms in chapters 4 through 9; the first number digit represents the chapter number. Where the forms refer to a figure, it is understood that they refer to the figures shown in the main body of the manual.

#### How to Use the Forms in this Section

This document contains tables with fill-in blanks, or form fields, in which you enter information. These tables are made of cells, and the ones in which you may enter information contain gray shading.

The following types of form fields are included in this Appendix:

Regular Text: Accepts text, numbers, symbols, or spaces.

**Number:** Allows a number only. If you enter a letter into this field, it will change to a zero after you leave the field.

Calculation: Uses a formula to calculate numbers, such as the sum of two columns, which automatically appears in another column. Users cannot fill in or change this field, even though it contains gray shading. Users must click in another number field to activate the calculations.

<b>Checkbox:</b> Shows the selection state of	of an item. When	the box is empty,	or unchecked,
click it to make an X appear. When the	box is checked a	and contains an X,	click the box to
remove it. Examples: Unchecked:	Checked: 🔽		

The form fields are already set up to accept only a certain type of input (numbers only or numbers and letters) and contain the formulas needed for automatically performing calculations. Users are not permitted to use the other fields in the forms (for example, change Item #s or values already in the form).

# Form 4.1 Initial Data on the LP-Gas Facility

of the paragraphs referenced in NFPA 58, as they are sometimes revised and renumbered. No technically substantive changes have been made to the manual since the first edition was published.

The models used in the Fire Safety Analysis (FSA) Manual to determine the distances to hazards (presented in Table B-1 of the FSA Manual) are based on published models in the literature. These models have been published in government reports, journal articles<sup>1,2</sup>, EPA-suggested procedures<sup>3</sup> and engineering monographs and books. The models used are considered conservative and have been simplified for the purposes of the FSA Manual.

A general reference on hazard distance assessment models is: Lees, F.P. (Editor), "Loss Prevention in the Process Industries," 2<sup>nd</sup> Edition, Vol 1, 2 & 3, Butterworth Heinemann Publishers, Oxford, England, 1996.

Raj, P.K., "Exposure of a liquefied gas container to an external fire," Journal of Hazardous Materials, v 122, Issues 1-2, p 37-49, June 2005.

US EPA, "*Technical Guidance for Hazard Analysis*," Emergency Planning for Extremely Hazardous Substances, EPA/FEMA/DOT, December 1987.

#### Acknowledgments

This fifth edition of the Fire Safety Analysis (FSA) Manual, based on the 2017 edition of NFPA 58, is a continuation of the effort to fulfill a need for an easily used and simple aid for the members of propane industry to fulfill their obligations under NFPA 58 (2001, 2004, 2008, 2011 and 2017 editions) which require developing a written FSA. The project was funded by the Propane Education & Research Council through the National Propane Gas Association (NPGA). The National Fire Protection Association (NFPA) was the principal contractor for the first edition of the manual. Technology & Management Systems, Inc. (TMS) developed the technical analyses and several chapters of the first edition of the manual, as a subcontractor to NFPA.

Mr. Theodore C. Lemoff, Principal Gases Engineer, was the principal investigator at NFPA. Dr. Phani K. Raj was the principal investigator and analyst at TMS. Mr. Bruce Swiecicki, P.E., Senior Technical Advisor at NPGA, served as a staff technical reviewer.

In preparation for the first edition, NPGA assembled an Advisory Committee consisting of representatives from the propane industry, a Fire Department of a major city in the US and a Fire Protection Engineer. The Committee provided technical inputs and guidance to the project team on industry safety practices, types of information that an authority having jurisdiction and emergency responders would want to see in an FSA, an insight into the levels of understanding of various issues related to FSA in the industry, etc. The Advisory Committee set not only the direction of the project but made policy decisions related to the scope of the FSA manual. Except for the contractors, every member of the Advisory Committee had a vote and many decisions were made on the basis of a Committee vote. The Advisory Committee consisted of the following (voting) members.

12	Michael Merrill (Chairman)	Suburban Propane LP	Whippany, NJ
13	Mr. Greg Benton	Georgia Gas Distributors	Atlanta, GA
14	Mr. Billy Cox	O'Nealgas Inc.	Choudrant, LA
15	Mr. James Howe	Howe Engineers, Inc.	West Falmouth, MA
16	Mr. Jerry Lucas	Heritage Propane Partners, LP	Sallisaw, OK
17	Mr. Rob Scott	Scott & Associates	Kingsburg, CA
18	Mr. Cliff Slisz	Ferrellgas	Liberty, MO
19	Mr. Scott Stookey	City of Phoenix Fire Department	Phoenix, AZ
20	Mr. Ron Stover	Mutual Liquid Gas & Equipment	Gardena, CA
21	Mr. Robert Wallace	Dowdle Butane Gas Co Inc	Maryville, TN
22	Mr. Brent Wolcott	Ag Valley Coop	Edison, NE

Mr. Theodore Lemoff and Dr. Phani Raj participated in the deliberations of the meetings of the Advisory Committee as non-voting members.

#### **About the Authors**

#### Phani K. Raj, Ph.D.

Dr. Raj is the President of Technology & Management Systems, Inc. (TMS). He holds S.M. and Ph.D. degrees in Mechanical Engineering as well as an MBA degree.

He has over 30 years professional experience in conducting safety research and assessing risks in the storage, transportation, handling and utilization of hazardous materials, including energy fluids. His research has included the development of mathematical models to describe the accidental release behavior of chemicals and flammable materials. In addition, he has developed easy to follow safety guideline documents and hazard assessment manuals for a number of clients including the Federal Agencies and industrial clients.

Dr. Raj developed a number of models for the "Chemical Hazard Response Information System" (CHRIS), which the U.S. Coast Guard and the National Response Center use for assisting in case of hazardous material emergencies. He is the author of CHRIS Manual III "Hazard Assessment Handbook."

Since 1996 he has been a member of the NFPA's Technical Committee on Liquefied Petroleum Gases which writes NFPA 58, *Liquefied Petroleum Gas Code*. He was a member of the Committee Transportation of Hazardous Materials (of the National Research Council), and emeritus member of the Editorial Board of the Journal of Hazardous Materials. He has held the post of visiting lecturer at MIT and taught, in the Chemical Engineering Department, a graduate level course. He is the principal author of over 100 technical reports and over 40 technical papers.

#### Theodore C. Lemoff, PE

Mr. Lemoff is retired from the National Fire Protection Association (NFPA). While at NFPA, he served as the Principal Gases Engineer. He holds a Bachelor of Engineering degree in Chemical Engineering and is a registered professional engineer in Massachusetts.

He has over 40 years experience in the fire safety and the chemical industry, including 25 years at NFPA working in the flammable gases area. He served as the staff liaison and secretary to the NFPA Technical Committee on Liquefied Petroleum Gases, responsible for NFPA 58, and for other NFPA codes and standards on flammable gases.

Mr. Lemoff is a member of the American Institute of Chemical Engineers, the Society of Fire Protection Engineers, the Society of Gas Engineers, and the American Society of Plumbing Engineers.

## **Table of Contents**

		Page :
Ori	gin and Development of the Fire Safety Analysis Manual	(ii)
Ack	knowledgments	(iv)
Abo	out the authors	(v)
CH	APTER 1 Introduction	
1.1	Background	1-1
1.2	Scope of the Manual	1-2
1.3	Need for a FSA Manual	1-3
1.4	LP-Gas Safety Record and Risks	1-4
1.5	Organization of the FSA Manual	1-5
CH	APTER 2 LP-Gas Storage Container Safety Features	
2.1	A Historical Perspective	2-1
2.2	Current LP-Gas Storage Container Safety Features	2-3
CH	APTER 3 Principal Elements of Fire Safety Analysis	
3.1	Important Steps in Conducting the Analysis	3-1
3.2	Completing the FSA	3-2
CH	APTER 4 Facility Information	
4.1	Initial Data for the LP-Gas Facility	4-1
4.2	Facility Storage Capacity and Other Details	4-1
4.3	Additional Facility Information	4-2
CH	APTER 5 Analysis of Product Control Measures in	
	Containers and Transfer Piping	
5.4	Product Control Measures in Containers	5-1
	54.1 Individual Containers of Water Capacity less than or equal to 2,000 gallons	5-2
	542 Individual Containers greater than 2,000 gallons water capacity and less	
	than or equal to 4,000 gallons water capacity	5-8
	A) Containers used in Residential and Commercial Facilities	5-8
	B) Containers used in Bulk and Industrial Facilities	5-11
	5.43 Individual Containers of Water Capacity greater than 4,000 gallons used in Bulk Plants and Industrial Plants	5-17
5.5	Product Control Measures in Transfer Piping	5-23
	55.1 Manifolded and Remotely Filled Containers	5-23
5.6	Alternate Provisions for the Installation of ASME Containers	5-26
٠.٠	5.6.1 ASME Container Appurtenances and Redundant Fail-Safe	5-26
	Product Control Systems	
	562 Low Emission Transfer Equipment	5-28

	CHAPTE	R 6 Analysis of Local Conditions of Hazard	
6.6	Physical P	rotection Measures	6-1
6.7	Ignition S	ources and Control	6-2
6.8	Separation	n Distances	6-3
		aration Distances between Container and Important Buildings, er Properties and Transfer Points	6-3
		aration Distances between Transfer Points and other Exposures	6-4
6.9	Special Pr	•	<b>-6-5</b>
	Vehicular		6-6
CHA	APTER 7	Exposure to and from Other Properties,	
	_	Population Density	
7.3		to off-site properties and persons from in-plant propane releases	7-1
7.4	Exposure	to Propane Plants From External Events	7-3
CHA	APTER 8	<b>Evaluation of Fire Services and Water Supply</b>	
		Requirements	
8.3		the Fire Service	8-1
8.4	Water Nee	eds and Availability	8-3
CHA	APTER 9	<b>Evaluation Summary for a Proposed New LP-Gas Facility</b>	
CHA	APTER 10	Fire Safety Analysis Examples	
10.5	Illustrative	e Example # 1	10-2
10.6	Illustrative	e Example # 2	10-21
10.7	Illustrative	e Example # 3	10-39
10.8	Illustrative	Example # 4	10-57
Glos	sary and A	Acronyms	G-1
App	endix A:	Fill-In Forms	A-1
App	endix B:	Results of Hazard Distance Calculations for Different LPG Release Scenarios	B-1

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## **List of Forms**

		Page #
Form 4.1	Initial Data on the LP-Gas Facility	4-1
Form 4.2	Facility Storage Capacity	4-2
Form 4.3	Additional Information on the LP-Gas Facility	4-3
Form 5.1	Compliance with Code Requirements for Appurtenances on Containers of 2,000 Gallons Water Capacity or Less	5-3
Form 5.2	Compliance with Code Requirements for Appurtenances on Containers of Water Capacity 2,001 Gallons Through 4,000 Gallons Used in Residences and Commercial Facilities	5-10
Form 5.3	Compliance with Code Requirements for Appurtenances on Containers of Water Capacity 2,001 Gallons Through 4,000 Gallons Used in Bulk Plants and Industrial Plants	5-12
Form 5.4	Compliance with Code Requirements for Appurtenances on Containers of Greater than 4,000 Gallons Water Capacity Used in Bulk Plants and Industrial Plants	5-18
Form 5.5	Requirements for Transfer Lines of 1½ inch Diameter or Larger, Liquid-into-Containers	5-23
Form 5.6	Requirements for Transfer Lines of 1½ inch Diameter or Larger, Liquid Withdrawal from Containers	5-24
Form 5.7	Requirements for Vapor Transfer Lines 1 <sup>1</sup> / <sub>4</sub> -inch Diameter or Larger	5-25
Form 5.8	Evaluation of Redundant Fail-Safe Design	5-26
Form 5.9	Evaluation of Low Emission Transfer Equipment	5-28
Form 6.1	Evaluation of Physical Protection and Other Measures	6-1
Form 6.2	Ignition Source Control Assessment	6-2
Form 6.3	Separation Distances between Containers and Buildings, Property Line, etc.	6-3
Form 6.4	Separation Distances between Points of Transfer and Other Exposures	6-4
Form 6.5	Special Protection Measures, Passive Systems	6-5
Form 6.6	Special Protection Measures, Active Systems	6-6
Form 6.7	Protection Against Vehicular Impact	6-6
Form 7.1	Types of Occupancies Near or Surrounding the LP-Gas Plant	7-3
Form 7.2	Exposure to LP-Gas Plant from External Hazards	7-4
Form 8.1	Data on the Responding Fire Department	8-2
Form 8.2	Response Time Data for the Fire Departments	8-4
Form 8.3	Water Flow Rate and Total Water Volume Required to Cool Containers Exposed to a Fire	8-5
Form 8.4	Evaluation of Water Availability in or Near the LP-Gas Facility	8-7
Form 9.1	Analysis Summary on Product Control and Local Conditions of Hazard	9-1
Form 9.2	Analysis Summary on Exposure From and to the LP-Gas Facility	9-2
Form 9.3	Analysis Summary on Fire Department Evaluations	9-3

Form 9.4	Redundant and Fail-Safe Design for Containers	9-5
Form 9.5	Low Emission Transfer Equipment	9-6
Form 9.6	Special Protection Measures –Passive Systems	9-7
Form 9.7	Special Protection Measures –Active Systems	9-7
	List of Tables	
Table 3.1	Description of the Various Steps in Performing the FSA	3-3
Table 5.1	Container Size Dependant Evaluations	5-1
Table 7.1	Distances to Various Types of Propane Hazards Under	7-2
14010 7.11	Different Release Models	
Table 9.1	Suggested Alternative Methods for Industrial and Bulk Plants That Do	9-8
	Not Pose a Hazard But Lack a Water Supply	
Table B-1	LPG Release Cases for Hazard Assessment	B-2
Table B-2	Distances to LFL Concentrations and Hazard Areas	B-4
Table B-3	Various Parameters and their Values Used in the Cases	B-6
Table B-4	Thermodynamic Properties of Propane	B-7
Table B-5	Calculation of the Mass Fraction of LPG and n-Butane	B-9

# **List of Figures**

		Page #
Figure 5-1	Schematic Representation of the NFPA 58 Requirements for Product Control Appurtenances on Containers of Water Capacity Less Than or Equal to 2,000 Gallons, With Different Service Configurations	5-4
Figu	re 5-1A: Single Vapor Service Line in a Manifolded Configuration	5-4
Figu	re 5-1B: Regulator in the Vapor Service Line	5-5
Figu	re 5-1C: Container with both Liquid and Vapor Service, Regulator in the Vapor Service Line	5-6
Figu	re 5-1D: Container Feeding Liquid to a Vaporizer	5-7
_	re 5-1E: Vertical Container for Liquid Service	5-8
Figure 5-2	Vapor Inlet Appurtenances on Containers of Water Capacity Greater Than 2,000 Gallons	5-13
Figure 5-3	Vapor Outlet Appurtenances on Containers of Water Capacity Greater Than 2,000 Gallons	5-14
Figure 5-4	Liquid Inlet Valves on Containers 2,001 through 4,000 Gallons Water Capacity	5-15
Figure 5-5	Liquid Outlet Valves on Containers 2,001 through 4,000 Gallons Water Capacity	5-16
Figure 5-6A	Liquid Inlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in New Bulk Plants and Industrial Plants	5-19
Figure 5-6B		5-20
Figure 5-7A	Liquid Outlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in New Bulk Plants and Industrial Plants	5-21
Figure 5-7B		5-22

### **CHAPTER 1**

### Introduction

### 1.1 Background

The Fire Safety Analysis (FSA) is a self-conducted audit of the safety features of a propane installation and an assessment of the means to minimize the potential for inadvertent propane releases from storage containers and during transfer operations. The assessment also includes an evaluation of the capabilities of local emergency response agencies as well as an analysis of potentially hazardous exposures from the installation to the neighborhood and from the surroundings to the LP-Gas facility.

Since 1976, NFPA 58, Liquefied Petroleum Gas Code (hereinafter referred to as the "code" or "NFPA 58") has required that a facility operator or owner conduct a FSA for propane facilities having ASME containers of aggregate storage greater than 4,000 gallons water capacity. The FSA requirement was changed in the 2001 edition to require a written FSA. The requirements for fire protection are indicated in the 2017 edition of NFPA 58 in §6.27, which addresses fire protection requirements for industrial plants, bulk plants and dispensing stations. Specifically §6.27.2 ("Planning") and §6.27.3 ("Protection of ASME Containers") require, in part, the following:

- **6.27.2.3** The planning for the response to incidents including the inadvertent release of LP-Gas, fire, or security breach shall be coordinated with local emergency response agencies.
- **6.27.2.4** Planning shall include consideration of the safety of emergency personnel, workers, and the public.
- **6.27.3.5** Fire protection shall be provided for installations with an aggregate water capacity of more than 4000 gal (15.2 m³) and for ASME containers on roofs.
- 6.27.3.6 The modes of fire protection shall be specified in a written fire safety analysis for new installations, for existing installations that have an aggregate water capacity of more than 4000 gallons (15.2 m³) and for ASME containers on roofs. Existing installations shall comply with this requirement within 2 years of the effective date of this code.
- **6.27.3.7** The fire safety analysis shall be submitted by the owner, operator, or their designee to the authority having jurisdiction and local emergency responders.
- **6.27.3.8** The fire safety analysis shall be updated when the storage capacity or transfer system is modified.

The FSA and required assessment of the installation provides several important benefits:

1) A structured assessment by which each facility can be evaluated for conformity of installed equipment with code requirements.

- 2) A means to evaluate the capability of systems and equipment installed to control and contain potential LP-Gas releases during day-to-day operations.
- 3) An approach to evaluate the informational needs of the facility, based on factors such as the type and frequency of transfer operations, size of the storage containers, location of the facility with respect to other buildings and the existing procedures and systems in place.
- 4) A means to describe product control and fire protection features which exceed the comprehensive requirements of NPFA 58<sup>1</sup>.
- 5) A tool for facilitating a cooperative and effective dialogue with local emergency response agencies and authorities having jurisdiction.

# 1.6 Scope of the Manual

The manual addresses a number of subjects, including:

- (1) A review of the product control measures required in the NFPA 58, "Liquefied Petroleum Gas Code"
- (2) Local conditions of hazards within the facility site
- (3) Exposures to and from other properties
- (4) Effectiveness of local fire departments
- (5) Effective control of leakage, fire and exposure
- (6) Illustrative examples using four different sizes of typical LP-Gas facilities

This FSA manual is intended for use by propane plant owners or operators, consultants, authorities having jurisdiction (AHJs) and emergency response personnel. The manual addresses the process by which a FSA can be conducted for a LP-Gas facility containing one or more stationary ASME containers.

The FSA manual is designed to provide a guide for identifying the requirements in NFPA 58 and determining compliance with them. Section 6.27.3.5 of NFPA 58 provides that:

The fire safety analysis shall be an evaluation of the total product control system, such as the emergency shutoff and internal valves equipped for remote closure and automatic shutoff using thermal (fire) actuation, pull away protection where installed, and the optional requirements of Section 6.28.

The philosophy of NFPA 58 is to minimize fires by minimizing the accidental release of propane if an incident should occur. Or put in simple terms, "no fuel, and no fire."

The manual does not address the following:

All reference, henceforth, to the "code" in this document should be construed as referring to NFPA 58, 2017 edition.

- 6. Marine terminals, refrigerated LP-Gas storage and the transportation of LP-gas by either rail tank cars or by cargo tank trucks. Marine terminals are governed by the OSHA Process Safety Management regulations and the US EPA Risk Management Plan regulations; refrigerated storage of LP-gas is a high-volume operation requiring special considerations; and, the transportation of LP-gas is addressed by Title 49 of the Code of Federal Regulations, *Transportation*.<sup>1</sup>
- 7. Storage of LP-Gas in salt domes and caverns.
- 8. Installations of ASME LP-gas containers on roofs of buildings. This type of installation, for which a fire safety analysis is required, is excluded from the scope of this manual primarily because of the rarity of such installations in the United States.
- 9. Cylinder filling operations at a dispensing facility, unless the storage threshold for LP-Gas has been exceeded, requiring an FSA to be prepared.
- 10. The use of facility employees performing as a "fire brigade."

The above facilities may be required to comply with other safety analysis requirements.

# 1.7 Need for a FSA Manual

Neither NFPA 58 nor the "Liquefied Petroleum Gas Code Handbook" provide detailed guidance on how to prepare or develop a written FSA. Since each industrial plant, bulk plant, or dispensing stationpresents unique physical and operational characteristics, the fire safety analysis is a tool used to assess the level of fire safety performance that a specific industrial plant, bulk plant or dispensing station can be expected to provide. This FSA will also provide essential information on the facility and its operation to the local authority having jurisdiction (AHJ) and local emergency response agency.

An informal survey was taken of AHJ's on the fire safety analyses used for existing and new plants in their jurisdictions (conducted by the author) at the time the first edition of this manual was being prepared. It indicated that there was no uniformity either in content, the details of information, or final assessment of the facility in the FSAs submitted. They ranged from a single page submission for a medium size bulk plant to very detailed assessment including risk assessment and management plan for a 30,000 gallon bulk storage facility. Without a guidance manual, potential confusion would almost certainly occur as each AHJ would be required to establish an individual set of criteria that would meet the FSA in their area. Thus, the need in the LP-Gas industry for assistance with the following tasks was clearly established.

- 5) Providing a FSA template that allows for consideration of different size installations
- 6) Establishing a uniform approach and defining common elements
- 7) Developing simplified checklists and an example-based methodology for completing the analysis
- 8) Utilizing technically-based guidance and support

The intent of this FSA manual is to provide an easy-to-use procedure for LP-gas facility owners or operators who are most familiar with the equipment technology and system operations and therefore qualified to complete the document. Knowledge of fire science and engineering

principles is not required for this document to be useable by an owner, operator or an AHJ, because those principles have already been factored into the assessment criteria contained within the FSA.

By utilizing the expertise of industry, engineering and fire service representatives in the development of the material to follow, this manual provides a comprehensive, uniform, objective approach that was designed to provide for the uniform and objective application of FSA requirements by the AHJs. Further, the joint input of the Propane Education & Research Council (PERC), National Propane Gas Association (NPGA), and the National Fire Protection Association (NFPA) provides additional assurance of the manual's depth, credibility and broadbased consensus.

This FSA manual has been developed based on the requirements of NFPA 58, 2017 edition. Using this manual to perform a FSA at a facility constructed to meet the requirements of prior editions of NFPA 58 or other state-specific codes may produce conflicts between actual facility construction and the checklists in this manual. The code or standard in effect at the time of construction of the facility should be used as the source of requirements to perform the FSA. Checklist items contained within this manual can be revised to indicate the appropriate code items required at the time of facility construction.

## 1.8 LP-Gas Safety Record and Risks

The LP-Gas industry has a long history of safe operations. With the requirement in the 1976 edition of NFPA 58 to retrofit LP-Gas plants with emergency shutoff valves (ESVs) in transfer lines, the safety of LP-Gas facilities was further improved.

The FSA provided in this manual, in addition to other safety programs currently enacted at any workplace, is intended to reduce or eliminate the risk of fatality or injury to both the plant employees and the public. In an effort to identify the level of risk a propane installation poses to the general public, as well as employees and emergency responders, the U.S. Department of Energy (DOE) instituted a study<sup>iii</sup> in 1981. Accident data from a variety of sources was analyzed, including: the US Department of Transportation hazardous material incident report database, reports of the National Transportation Safety Board, National Fire Protection Association, technical journals and other sources. Data analyzed for the period 1971 through 1979 addressed LP-Gas transportation and product releases from stationary storage facilities. The special focus of the study was the fatalities suffered by employees and the general public. The study concluded that a fatality to the general public as a direct result of an LPG transportation or storage incident involving the loss of product is very small and the risk (expressed in expected number of fatalities per year) is smaller than that from natural phenomena (lightning, tornadoes, objects falling from the sky, etc).

An analysis conducted by the National Fire Protection Association<sup>iv</sup> of LP-Gas fire damage and casualty data during the period between 1980 and 1999 also indicates that the LP-Gas storage facility operations in the US are very safe. The number of reported fires at LP-Gas bulk storage facilities remains small and has fallen since 1980, but substantial variation exists from year to year. During the five-year period from 1994 through 1998, an estimated 49 fires, on average,

were reported per year at LP-Gas bulk storage facilities. These fires caused an annual average of one civilian death, five civilian injuries and \$754,000 in direct property damage. In 1999, an estimated 58 reported fires on these properties caused four civilian injuries and \$722,000 in direct property damage. The 58 fires reported in 1999 accounted for .003% of all fires reported that year.

# 1.9 Organization of the FSA Manual

The manual has been organized to address the requirements outlined in the 2017 edition of NFPA 58, Sections 6.27 and 6.28.

Chapter 2 discusses the requirements of the 2017 edition of NFPA 58 in regard to product control requirements, and their evolution. The philosophy and the advantages of product control systems are discussed. Also included are the various appurtenances used in a typical LP-Gas facility. More detailed information on the types of valves, their functions and example photographs of various appurtenances are provided in Appendix B. Chapter 3 provides an overview of the FSA process including its principal elements.

The input of data into the FSA procedure begins with Chapter 4. In Chapter 4, basic information about the LP-Gas facility is input into appropriate tables and a decision is made (based on the data provided) as to the extent of the analysis that should be completed. The assessment of conformity with code requirements of the product control requirements for containers and in transfer piping is performed in Chapter 5. To aid this assessment a series of sketches of possible configurations of container appurtenances (satisfying 2017 code requirements) are provided. Note that several section references have been changed from the published edition of the 2017 edition due to the acceptance of Tentative Interim Amendment 14-3, which is reprinted with permission in Appendix C. When necessary, the year when specific equipment was required by the code is also indicated on the sketches to facilitate application of the Manual to facilities constructed to the requirements in previous editions of NFPA 58. The analysis of the local conditions of hazard is presented in Chapter 6, followed by the assessment in Chapter 7 of the hazard exposure to off-site properties and persons. Also, the potential exposure to LP-Gas installations from off-site activities is covered in Chapter 7.

The evaluation of the capabilities of the local emergency responder (usually the fire department) and the availability of water to fight in-plant fires and exposures are presented in Chapter 8. Summary of evaluations and actions that may need to be initiated for proposed LP-Gas facilities are presented in Chapter 9. The use of this manual in preparing a written FSA for a LP-Gas facility is demonstrated with examples of four different generic cases. Several different sizes of facilities are considered.

A set of blank forms required to perform a FSA is provided in Appendix A. The results of calculating the hazard distances for a set of credible LP-gas release scenarios are provided in Appendix B. Also provided in Appendix B are the thermodynamic properties of propane and the values of other parameters used in calculating the hazard distances.

<sup>&</sup>lt;sup>i</sup> U. S. Code of Federal Regulations, Title 49, Transportation
<sup>ii</sup> Liquefied Petroleum Gas Handbook, Beach, 2017, NFPA, Quincy MA
<sup>iii</sup> LPG Land Transportation and Storage Safety, Department of Energy report No. DOE/EV/06020-TS 9/18/81"
<sup>iv</sup> Fires at LP-Gas Bulk Storage Plants Statistical Analysis, NFPA, 2003, Quincy, MA

# **CHAPTER 2**

# **LP-Gas Storage Container Safety Features**

The fundamental premise on which the requirements for LP-Gas facility safety specified in several recent editions of NFPA 58 is based is the following:

If product release can be either controlled or eliminated, safety is effectively addressed.

A product release creates the potential for the occurrence of a fire. Therefore, the focus of both NFPA 58 and the Fire Safety Analysis Manual is on the need to design systems (incorporating product controls) to ensure, to the extent possible with current technology and procedures, the elimination of the accidental release of LP-gas from storage or during transfer operations.

# 2.3 A Historical Perspective

In the late 1960's and the early 1970's there were a number of fires and BLEVEs (Boiling Liquid Expanding Vapor Explosions) of propane and other liquefied petroleum gases resulting from derailments of railcars carrying propane and other flammable liquefied gases. These incidents involved fire fighter fatalities and highlighted the need for safety improvements. As a result, the U. S. Department of Transportation (DOT) implemented new regulations for the tank cars used to transport propane and other liquefied flammable gases, and made them mandatory and retroactive in 1980. These improvements included:

- Head shields to reinforce the pressure vessel on the railcar
- "Shelf" couplers to reduce the potential for railcars to be uncoupled during a derailment
- Thermal protection to reduce the potential for the tank to experience a rise in temperature due to flame impingement

Since these improvements in rail car safety were made in the 1980's, there have been no fire fighter fatalities from any railroad tank car BLEVEs and the number of these incidents has been greatly reduced, to the authors' knowledge.

In 1973, product control requirements to prevent the uncontrolled release of LP-gas from storage containers consisted primarily of manually operated valves, backflow check valves and excess-flow check valves.

On July 3, 1973 a propane incident occurred in Kingman, Arizona involving a propane fire at a propane tank car unloading area in a propane bulk storage plant. Though the plant's equipment conformed to the requirements of NFPA 58 and other safety standards for flammable materials at that time, the incident resulted in the death of several fire fighters and one plant employee.

A direct result of this incident (and others that occurred at approximately the same time) was the addition of a new fire protection requirement in the 1976 edition of NFPA 58. The requirement stated that planning "for the effective measures for control of inadvertent LP-Gas release or fire" shall be done and coordinated with local emergency responders. In addition, the primary consideration of a fire safety analysis at that time was the use of water as a suppressing agent to control fires. The requirements today are very similar to those original requirements except in two areas.

- As of the 2001 edition, fire safety analyses are required to be written;
- The primary consideration in performing such an analysis has changed from the emphasis of using water for fire control to the emphasis of avoiding product release altogether using technology and training.

This modern approach takes advantage of the inherent safety present in a controlled environment such as a bulk plant, as well as the safety features of the most current product control hardware.

In early editions of NFPA 58, the primary consideration of water as the means to control a fire was based on the fact that at that time, there were few reliable ways to stop the flow of LP-gas after failures in the system and the need to apply water quickly to storage containers being impinged by flames was important.

Another significant change in the 1976 edition of NFPA 58 was the requirement for including an emergency shutoff valve (ESV) in the transfer lines used between stationary storage containers of over 4,000 gallons capacity and cargo tank vehicles. This revision was intended to prevent product release from storage containers in the event of a vehicle pulling away with its hoses still connected. All existing plants were required to comply with this requirement by the end of 1980. Since this retrofit program was completed, there has not been, to the knowledge of the authors, a pull-away accident involving an ESV installation that resulted in serious consequences.

The 1980's enjoyed a reduced number of propane incidents in the U. S., and the next major product control enhancement was the revision to introduce an optional requirement for internal tank valves in containers over 2,000 gallons in the 1992 edition of NFPA 58. These tank valve requirements included:

#### Vapor and Liquid Withdrawal Openings in Tanks

- 3. Positive shutoff valve in line with excess flow valve installed in the tank, or
- 4. Internal valve with integral excess flow shutoff capability

#### Vapor and Liquid Inlet Openings in Tanks

- 4. Positive shutoff valve in combination with either an excess flow valve or backflow check valve installed in the tank, or
- 5. Internal valve with integral excess flow valve, or
- 6. Internal valve with remote means of closure

These revisions were made to enhance the operational features of product control hardware. Internal valves are capable of being closed from a remote location (using a cable, pneumatic, or hydraulic device) and by thermal activation, which is accomplished using an element that melts when it is subjected to fairly moderate temperatures (in the 200°F - 250° F range).

The 2001 edition of NFPA 58 was further revised to require internal valves for liquid connections to containers over 4,000 gallons, with remote and thermal shutoff activation. This change was the result of the Committee desiring improved safety performance with this advanced hardware, due to the following incidents:

- Sanford, NC. A hose separation resulted in the loss of the contents of a transport vehicle (9700 gallons water capacity). The contents within the storage containers were also lost because of a failed check valve.
- Albert City, Iowa. An exposed liquid pipe installed in violation of the code between an 18,000 gallon water capacity storage container and a vaporizer was broken when a recreational vehicle accidentally drove over it. The leaking gas found a source of ignition and impinged on the container, resulting in a BLEVE.
- Truth or Consequences, NM. A small, parked truck rolled into a propane bulk storage plant, breaking plant piping. The resulting fire caused the failure of several cylinders.

These improvements in product control are considered critically important, and in addition to requiring them for all new installations after 2001, the requirements were made retroactive to all existing installations, allowing 10 years for the conversion. All existing containers over 4,000 gallons water capacity will be retrofit with an internal valve or similar protection on all liquid connections. Alternatively, the use of an emergency shutoff valve (ESV) as close to the container as practical is also allowed, in recognition that some containers cannot accommodate an internal valve without extensive modification. The ESV has the same remote and thermal activation closing features as an internal valve.

# 2.4 Current LP-Gas Storage Container Safety Features

As of the 2001 edition, NFPA 58 requirements for product release control include the provision for a number of different types of valves or appurtenances in the product storage containers, transfer piping network and at liquid transfer facility locations. Generally, code requirements for product control appurtenances on containers used in industrial plants and bulk plants, as well as dispensing stations, are more stringent than for residential and commercial use containers.

In the 2017 edition of NFPA 58, changes to the definitions of "Bulk Plant" and "Industrial Plant" clarified the intent of the NFPA Technical Committee on Liquefied Petroleum Gases by stating that each of those types of facilities utilize only containers greater than 4,000 gallons water capacity. Therefore, modifications were made to Chapter 5 of this manual to remove references to containers between 2,000 and 4,000 gallons water capacity. The manual does retain information on containers less than 4,000 gallons water capacity due to

the fact that some dispensing stations may be utilizing more than one container less than 4,000 gallons, but with an aggregate capacity greater than 4,000 gallons.

Unless product is being transferred, product control valves are normally in the closed position. However, some of the installations require an automatic shutoff feature when either a fire (or heat) is sensed or when other abnormal conditions occur. The product control valves include the following:

**Positive shutoff valve:** A shutoff valve that, in the closed position, does not allow the flow of product in either direction. [NFPA 58, 3.3.75.7]

**Backflow check valve:** This valve allows flow in one direction only and is used to allow a container to be filled while preventing product from flowing out of the container.

Excess-flow valve: A valve designed to close when the liquid or vapor passing through it exceeds a prescribed flow rate. [NFPA 58, 3.3.75.3]

**Internal valve:** A container primary shutoff valve that can be closed remotely, which incorporates an internal excess flow valve with the seat and seat disc located within the container so that they remain in place should external damage occur to the valve. [NFPA 58, 3.3.75.6]

Emergency shutoff valve: A shutoff valve incorporating thermal and manual means of closing that also provides for a remote means of closing. [NFPA 58, 3.3.75.2]

**Hydrostatic pressure relief valve**: A type of relief valve that is set to open and relieve pressure in a liquid hose or pipe segment between two shutoff valves when the pressure exceeds the setting of the valve.

Container pressure relief valve: A type of pressure relief device designed to open and then close to prevent excess internal fluid pressure in a container without releasing the entire contents of the container. The valve is located in the vapor space of the container.

Bulk storage installations incorporate several product release control appurtenances. This fire safety analysis manual outlines alternative schematics for the various facilities covered (4,000 gallons or less and greater than 4,000 gallons water capacity).

### **CHAPTER 3**

# **Principal Elements of the Fire Safety Analysis**

The principal elements of the Fire Safety Analysis (FSA) required by NFPA 58 (in §6.27, and container protection requirements in §6.27.3) are described in this chapter. This manual for performing the FSA addresses the following LP-Gas facility-related items:

- 7 Effectiveness of Product Control measures
- 8 Local conditions of hazard within the container site, including congestion within the site
- 9 Exposure to off-site properties and populations and the impact of neighboring industrial activity on the facility
- 10 Effectiveness of the local Fire Department that may respond to an emergency within the facility
- 11 Requirements for and availability of adequate water supply
- Full compliance with Code requirements for existing LP-Gas facilities and corrective actions to be implemented for a proposed facility to address any deficiencies

The details of how each of the above items is evaluated in performing the FSA are indicated in Chapter 4 though Chapter 9. Shown below is a brief review of the various steps involved in conducting the FSA.

# 3.3 Important Steps in Conducting the Analysis

The development of a Fire Safety Analysis (FSA) involves a number of important steps. These steps are indicated in Table 3.1. Also shown in Table 3.1 are the chapters in this manual where the referenced analysis steps are discussed in detail.

Each set of FSA requirements is presented in one or more tables and fill-in forms. The tables provide either factual information or calculated results; the user obtains information from the tables for further analyses. The fill-in forms specify NFPA 58 requirements or other assessment parameters, and provide two columns, one with a "Yes" column heading and the other with a "No" heading. In some cases either schematic or pictorial representations are provided to clarify a requirement. The fill-in forms require some information input from the user, either checking a "Yes" column or a "No" column or writing a numerical value. Also provided are notes under each table or fill-in form, which explains conditions, if any, associated with the table or the form or how a calculation is performed for entering data into the form.

Appropriate explanations are provided in the text either preceding a form or after the form, if any action is necessary depending upon the values/contents in the forms. A blank copy of each form presented in Chapter 4 through Chapter 9 is provided in Appendix A. These can be reproduced and used for any number of LP-Gas facilities.

The FSA for a LP-Gas facility is conducted by systematically completing the forms in Chapter 4 through Chapter 9. The person completing the FSA must indicate a "Yes" or "No" in the appropriate column for each requirement, depending upon whether the LP-Gas facility fulfills the specific requirement. Any items, which may need to be undertaken to correct a deficiency in a proposed (as opposed to existing) LP-Gas facility are referred to in Chapter 9.

Once the FSA is complete, the forms together with information about the facility, can be filed to satisfy the "written" requirement of NFPA 58, §6.27.3.2 & 6.27.3.3. Any emergency planning for the facility is required to be coordinated with the local fire department or equivalent responding authority (§ 6.27.2.1).

# 3.4 Completing the FSA

Chapters 4 through 9 provide a framework with which the Fire Safety Analysis can be conducted to satisfy the requirements of NFPA 58. It is important to note the following in performing the analysis using the tables, fill-in forms and steps indicated in the following chapters.

- 4 All references to the "Code" in this manual are to the 2017 edition of the NFPA 58 "Liquefied Petroleum Gas Code."
- If a LP-Gas facility was built to satisfy the requirements of an edition of NFPA 58 earlier than the 2017 edition, then you may obtain a copy of the appropriate edition of the Fire Safety Analysis Manual and use that resource for your evaluation. If you must use this manual and an appurtenance or other requirement is specified in one or more of the forms in this manual (developed based on the 2017 edition), and this requirement was not in the edition to which the facility was built, then it is recommended that the "Yes" and "No" column corresponding to the particular appurtenance or requirement be left blank or marked "NA," to signify the requirement is not applicable to the facility in question.
- If the facility for which the analysis is being performed was constructed to satisfy the requirements of a previous edition of NFPA 58, it must still comply with all requirements that have been made applicable retroactively in later editions of the code, through the 2017 edition. Such retroactive provisions are indicated where they are applicable.

Table 3.1
Description of the Various Steps in Performing the FSA

Step #	FSA Steps	Chapter where described			
1	Gather data on the volume of LP-Gas stored and other information pertinent to the facility.	Chapter 4			
2	Perform simple calculations and determine whether the facility is subject to the requirements for developing an FSA.	Chapter 4			
3	Evaluate the product control appurtenances and other safety features of the facility relative to the requirements of the NFPA 58 code.				
4	Assess the appurtenance requirements for containers of different capacities and compare them to the actual installation.				
5	Evaluate the requirements for valves on transfer piping and compare them to the valves provided in the facility.	Chapter 5			
6	Assess conformance to the code of a Redundant and Fail-Safe Product Control System, if such a system is provided in the facility.				
7	Evaluate the code conformance of the Low Emission Transfer Equipment if installed in the facility.				
8	Analyze the protection measures against local conditions of hazard. That is, assess whether all requirements of the code for the physical protection of containers and transfer piping are implemented.				
9	Analyze the code requirements for the control of ignition sources and whether these requirements are complied with.	Chapter 6			
10	Assess conformance to the code requirements for separation distances between (i) containers of different sizes and property lines and, (ii) LP-Gas transfer points and other exposures.	Chapter 0			
11	Evaluate conformance to the code requirements for Special Protection Systems, if they are provided on containers in the facility.				
12	Evaluate the potential hazards to off-site populations and property from propane releases in the facility. This step includes selecting credible LP-Gas release scenarios and assessing the distance (and area) over which the hazard exists.				
13	Assess whether any off-site populations, especially people in institutional occupancies, are potentially subject to the LP-Gas release hazards	Chantar 7			
14	Evaluate whether there exists a hazard from other industrial operations around the LP-Gas facility	Chapter 7			
15	Evaluate the effectiveness of the local Fire Department, including the availability and capability of response personnel, training level, equipment and response time to an emergency in the facility.	Chapter 8			
16	Evaluate the amount of water needed to cool containers exposed to a fire and the adequacy of the facility (or locally available) water supply.	Chapter			
17	For a proposed facility, develop corrective actions to address deficiencies found.				
18	Assess, based on specific criteria, the need to provide Redundant and Fail-Safe Product Control Systems.	Chapter 9 (Only applicable			
19	Assess, based on specific criteria, the need to provide Low Emission Transfer Systems.	for proposed			
20	Assess when Special Protection Systems are needed	facilities)			
21	Evaluate alternative approaches to using water in a special protection system				

#### **CHAPTER 4**

# **Facility Information**

In this chapter basic information on the LP-Gas facility is recorded and a decision is made on whether the facility is required to have a completed Fire Safety Analysis (FSA) performed. If it is determined that a FSA is required, additional information on the facility is recorded.

# 4.4 Initial Data for the LP-Gas Facility

Complete Form 4.1 to provide basic information on the facility.

Form 4.1 Initial Data on the LP-Gas Facility

A	В	C
Item #	Information Item	Data
1	Name of the LP-Gas Facility Owner or Operator	Jesse Aguirre
2	Contact Name:	Jesse
3	Contact Telephone & Fax Numbers	1-760-578-4724
4	Contact Email Address	aguirres.propane@yahoo.com
5	Mailing Address, PO Box 2822 Indio CA 92202	Street 1:1338 Glendale Ave Street 2:  City, State, Zip; Thermal, CA 92274

# 4.5 Facility Storage Capacity and Other Details

Complete Form 4.2. Multiply Column B by its corresponding entry in Column C, write the answer in the corresponding cell in Column D, then sum all the entries in Column D and write it in Row 2, Column D. This number is the "Aggregate Water Capacity" of the facility.

Form 4.2 Facility Storage Capacity <sup>1,2,3</sup>

Α	В	С	D		
Item #	Individual Container Water Capacity (w.c.) (gallons)	Number of containers	Total Water Capacity (w.c. of each container size (gallons)		
	500	X	0		
	1,000	X	0		
	2,000	X	0		
	4,000	X	0		
	10,000	X	0		
1	18,000	X	0		
1	30,000	1	30,000		
	60,000	X	0		
	Other:				
2	Aggregate Water Capacity <sup>4</sup>	1	30,000		

Notes:

- (1) Column  $D = Column B \times Column C$ .
- (2) Parked bobtails, transports and tank cars should not be considered for aggregate capacity calculations.
- (3) Do not consider containers that are not connected for use.
- (4) For the purpose of this manual, "Aggregate Water Capacity" means any group of single ASME storage containers separated from each other by distances less than those stated in the aboveground containers column of Table 6.3.1.1.

If the aggregate water capacity of the LP-Gas facility is less than or equal to 4,000 gallon (w.c.), no further assessment is required.

#### YOU CAN STOP HERE.

If the aggregate water capacity of the facility is greater than 4,000 gallons, continue the analysis.

# 4.6 Additional Facility Information

Complete Form 4.3 below and record additional information on the facility.

Complete also the remainder of Fire Safety Analysis indicated in Chapter 5 through Chapter 8 (plus Chapter 9 for proposed facilities).

# Form 4.3 Additional Information on the LP-Gas Facility

Ĺ	☐ Existing Facility built to NFPA 58 Edition 2017 ☐ Proposed Facility								
g)	Name of the Facility (if applicable) Aguirre Propane								
h)	Type of LP-Gas Facility								
i)	Facility is located in ☐ Rural Area ☐ Suburban Area X City Commercial Zone ☐ City Industrial Zone								
j)	Facility neighbors§:   Agri. fields   Commercial Bldgs.   Flammable Liquids Storage (Check all that apply)   Industrial Activity (metal fabrication, cutting and welding, etc)   Manufacturing X Others (explain)   Transmit ion Building								
k)	Geographic Location of Facility/Address: 1338 Glendale Ave, Thermal CA								
1)	Landmarks, if any: N/A								
g)	LP-Gas liquid supply by: ☐ Bobtail X Truck Transport ☐ Rail Tank Car (Check all that apply) Pipeline								
h)	LP-Gas Distribution by:       X Bobtail       □ Truck Transport       □ Vapor Piping         (Check all that apply)       □ Liquid Piping       □ Dispensing or Vehicle Liquid fueling								
ii)	Number of Vehicle Entrances: X One □ Two □ More than two								
j)	Type of Access Roads to the Facility (One check per line) Entrance 1 □ Dirt road □ Gravel road □ Paved (One check per line) Entrance 2 □ Dirt road □ Gravel road □ Paved								
k)	Staff presence ☐ Not staffed ☐ X Only during transfer operations ☐ Staffed always (24/7) ☐ Only during business hours ☐ Other (Explain)								
n)	Location and distances to Assembly, Educational or Institutional Occupancies surrounding the facility, if any, within 250 ft from the facility boundary in the direction of the assets. N/A								
o)	Overview plot plan of the facility attached? X Yes   No								

<sup>§</sup> All properties either abutting the LP-Gas facility or within 250 feet of the container or transfer point nearest to facility boundary.

# **CHAPTER 5**

# **Analysis of Product Control Measures In Containers and Transfer Piping**

# 5.2 Product Control Measures in Containers

NFPA 58 requires the installation of several product control safety devices both on containers and in transfer piping to minimize the accidental release of LP-Gas, either liquid or vapor. The requirements for product control equipment depend on the following:

- The size of individual containers,
- Whether the containers in a facility are individually filled or filled through a common liquid manifold,
- Whether the product is transferred from the storage container as a liquid or vapor (or both).

A facility may have LP-Gas containers of different sizes; it is therefore necessary to evaluate compliance with the code requirements on a container-by-container basis as well as on a facility basis.

In this chapter, the appurtenance requirements of the code are listed for LP-Gas containers of different sizes. A series of forms are provided which indicate the code-required product control hardware for container and facility piping. The forms also provide space to record the product control equipment actually installed on the containers as well as transfer piping at the facility. These forms must be completed as a part of this Fire Safety Analysis.

Note: Section numbers and table numbers have been changed significantly as a result of Tentative Interim Amendment TIA 14-3, shown in Appendix C.

Complete Forms 5.1 or 5.2 depending upon the size of the individual containers in the facility. Then, perform an analysis of the product control appurtenances for each container located in the facility.

Table 5.1
Container Size-Dependent Evaluations

individual contai	facility contains iners in the volume allons w.c.)		Perform the analysis specified
Greater than	And Less than or equal to		in Section
0	4,000	0	5.1.1
4,000	-	0	5.1.2

## 5.1.3 Individual Containers of Water Capacity less than or equal to 4,000 gallons

Containers of 4,000 gallons water capacity (w.c.) or less can be configured with product control appurtenances in a number of different ways. These are schematically illustrated in Figures 5-1A through Figure 5-1E. Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes

#### Complete the following steps using the schematics in Figure 5-1A through Figure 5-1E

- 1 Select the first container at the facility, which has a water capacity of 4,000 gallons or less. Enter this as container number 1 in Column A of Form 5.1, below.
- 2 Review each of the service configurations given in Figure 5-1A through Figure 5-1E. Select the schematic that most closely represents the configuration in the facility for this container. Enter the figure number of the configuration selected for this container in Column B.
- 3 Count the total <u>number</u> of "Yes" shown in this configuration. This represents the number of required appurtenances for the specific configuration. Enter this number in column C of Form 5.1.
- 4 Check "Yes" under each appurtenance that is actually installed on the container. If the appurtenance is not provided, then check "No."
- 5 Count the number of boxes checked "Yes." Enter this number in Column D of Form 5.1.
- 6 Repeat steps 1 through 5 for each container of 4,000 gallons water capacity or less at the facility.

Form 5.1

Compliance with Code Requirements for Appurtenances on Containers of 4,000 Gallons Water Capacity or Less

A	В	C	D	E	
	Service	Number of Pr Appure	NFPA 58		
Container #	Configuration Sub Figure (in Figure 5-1)	Required by NFPA 58 (applicable edition)	Installed-on- the Container	Section Reference (2017 edition)	
1	n/a			5541	
2	n/a			5.7.4.1	
3	n/a			Table 5.7.4.1(B)	
4	n/a			and	
5	n/a			5.7.4.4	
6	n/a				

If, in Form 5.1, any one of the numbers in column D is less than the number in Column C of the corresponding row, then these items must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

#### Figure 5-1

# Schematic Representation of the NFPA 58 Requirements for Product Control Appurtenances on Containers of Water Capacity Less Than or Equal to 4,000 Gallons, with Different Service Configurations

(Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes)

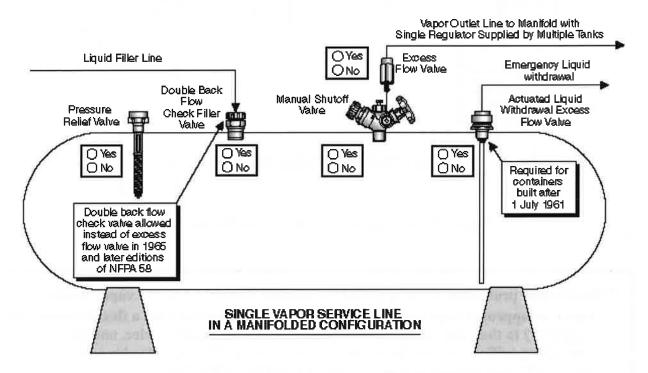


Figure 5-1A: Single Vapor Service Line in a Manifolded Configuration

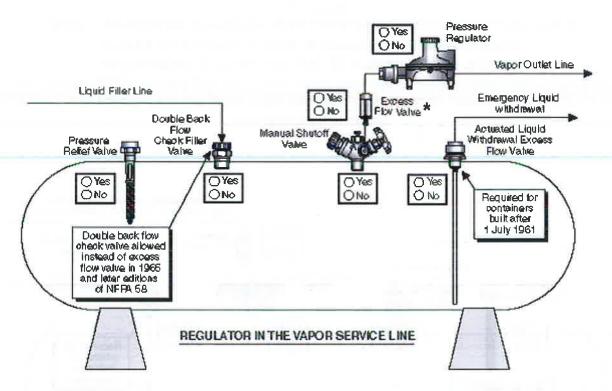
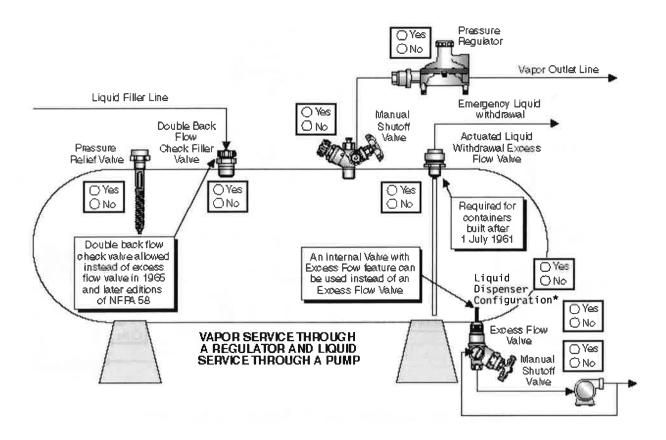


Figure 5-1B: Regulator in the Vapor Service Line

\* Excess-flow protection is not required for manual shutoff valves for vapor service where an approved regulator is directly attached or attached with a flexible connector ("pig tail") to the outlet of the manual shutoff valve for vapor service, and the controlling orifice between the container contents and the shutoff valve outlet does not exceed 5/16 inch (8 mm) in diameter (5.7.4.1 (B)(8), NFPA 58).



<sup>\*</sup>For liquid dispenser configuration, see 6.25.3.8.

Figure 5-1C: Container with Both Liquid and Vapor Service, Regulator in the Vapor Service Line.

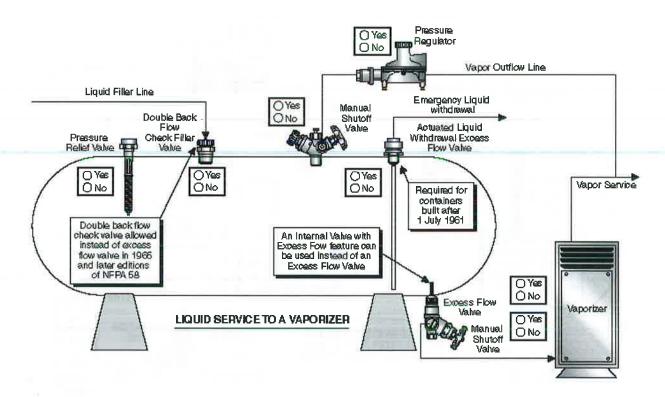
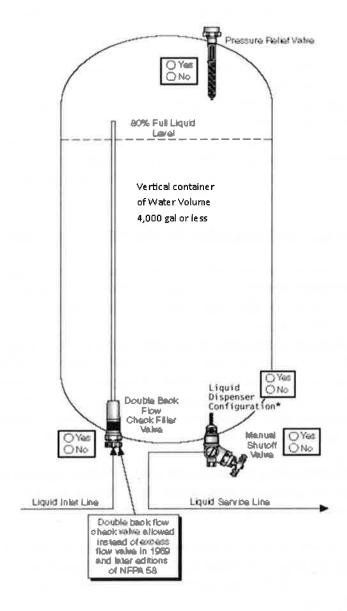


Figure 5-1D: Container Feeding Liquid to a Vaporizer.



<sup>\*</sup>For liquid dispenser configuration, see 6.25.3.8.

Figure 5-1E: Vertical Container for Liquid Service, 4,000 Gallon w.c. or Less.

#### 5.1.4 Individual Containers Having a Water Capacity Greater than 4,000 Gallons

The compliance with the code requirements for appurtenances in this container size range must be evaluated for LP-Gas flow both into the container (vapor and liquid) and out of the container (vapor and liquid). In addition, note that there are retrofit requirements for existing containers without internal valves in liquid service that were to be completed by July 1, 2011. Several different appurtenance service configurations meet these requirements. These are indicated in Form-5.3. Note: Container appurtenances-shown-are illustrative of product control equipment-only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes.

#### Enter the information in Form 5.2 by following the steps indicated below

- 8 Select the first container in the facility having a water capacity greater than 4,000 gallons. Enter this as container number 1 in Column A of Form 5.2 below.
- 9 Complete each of the rows identified as the vapor inlet, vapor outlet, liquid inlet and liquid outlet service for this container.
- 10 Select the appurtenance configuration for vapor service which most closely corresponds to the design used in the facility. Figure 5-2 shows different vapor inlet configurations. Enter in column D the configuration number that corresponds to the design used in the facility.
- 11 Count all "Yes" in the schematic sketch corresponding to this configuration and which provide for vapor inlet into the container. This is the number of required appurtenances that should be provided according to the code. Enter this number in column E of the row corresponding to "Vapor Inlet."
- 12 Check "Yes" corresponding to each appurtenance that is <u>installed</u> on this container. If the appurtenance is not provided, then check "No". Count the total number of boxes with <u>installed</u> appurtenance marked "Yes" in the facility. Record this number in column F of the same row.
- 13 Repeat steps 3, 4 and 5 for each vapor outlet configuration (using Figure 5-3), liquid inlet configuration (using Figure 5-6) and liquid outlet configuration (using Figure 5-7).
- 14 Repeat steps 1 through 6 for each container of water capacity greater than 4,000 gallons located at the facility.

Form 5.2

Compliance with Code Requirements for Appurtenances on Containers Having a

Water Capacity Greater Than 4,000 Gallons

A	В	C		D	E	F	G		
Container #	LP-Gas inlet to and outlet from the container**		and outlet from the container**		Con	nter afigur- tion mber	Total Nu Product Appurte Required by NFPA 58 (applicable edition)	Control	NFPA 58 Section Reference (2017 edition)
	Vanor	Inlet	5-2	2	2017	2			
1	Vapor Liquid	Outlet	5-3	2	2017	2			
1		Inlet	5-6	4	2017	4			
	Liquid	Outlet	5-7	4	2017	4			
	Vapor Liquid	Inlet	5-2		0	0			
2		Outlet	5-3		0	0	5742		
2		Inlet	5-6		0	0	5.7.4.2, Table 5.7.4.2		
		Outlet	5-7		0	0	and		
	Vapor	Inlet	5-2		0	0	5.7.4.3		
3	v apor	Outlet	5-3		0	0	5.7.4.5		
3	Liquid	Inlet	5-6		0	0			
	Liquid	Outlet	5-7		0	0			
	Vanor	Inlet	5-2		0	0			
4	Vapor	Outlet	5-3		0	0			
4	Lianid	Inlet	5-6		0	0			
	Liquid	Outlet	5-7		0	0	T.		

<sup>\*\*</sup> If the container does not provide an opening for the specific function listed, enter 0 (zero) in columns E and F corresponding to that row.

If in Form 5.2 any one of the numbers in column F is less than the number in Column E of the corresponding row, these items must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

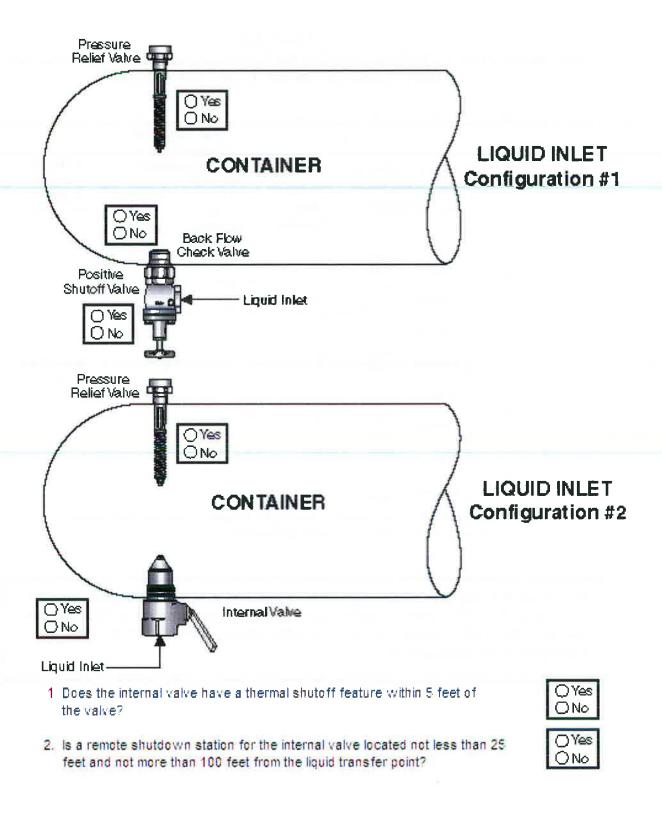
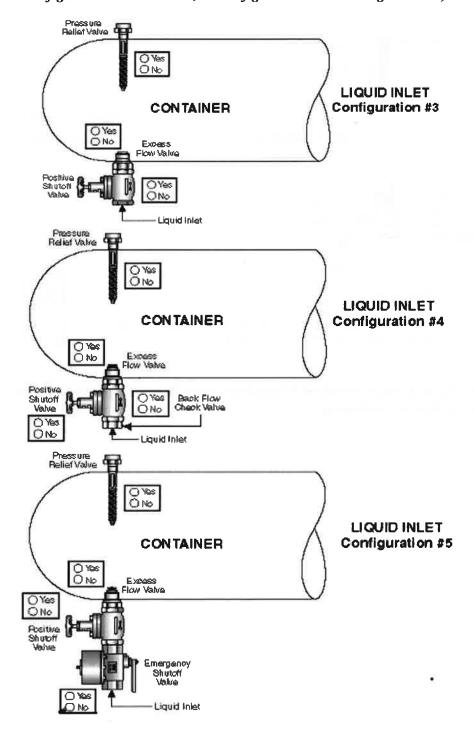


Figure 5-6A Liquid Inlet Valves on Containers With Water Capacity Greater Than 4,000 Gallons in New Installations

(NOTE: Prior to July 1, 2011 <u>existing</u> installations may utilize Configurations 3, 4 or 5 of Fig 5-6B, or either configuration in Figure 5-6A. After July 1, 2011, installations must comply with Configurations 4 or 5 below, or Configuration 1 or 2 in Figure 5-6A.)



Note: The emergency shutoff valve in configuration #5 must be equipped for remote closure. This valve must be installed in the line upstream as close as practical to the positive shutoff valve/excess- flow valve combination.

Figure 5-6B: Liquid Inlet Valves on Containers With Water Capacity Greater Than 4,000 Gallons in Existing Installations

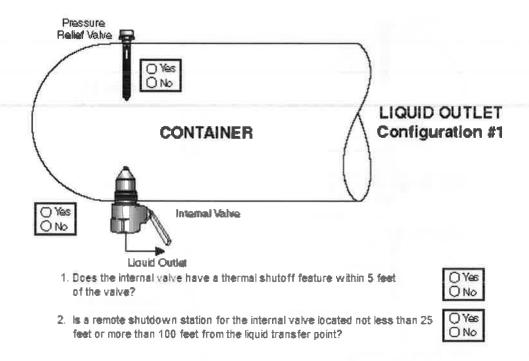
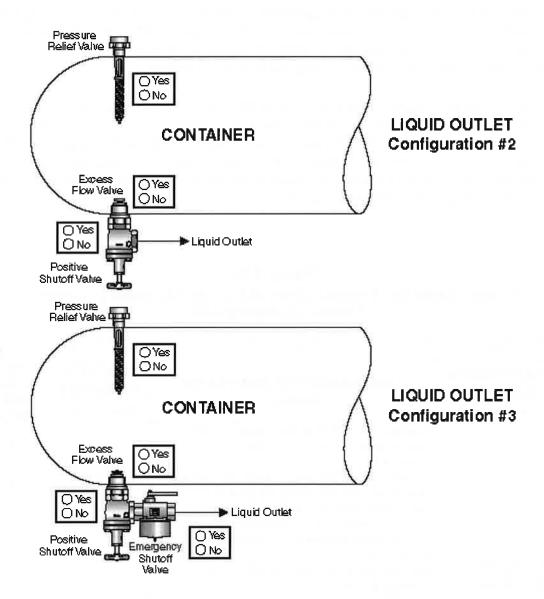


Figure 5-7A: Liquid Outlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in New Installations

(NOTE: Prior to July 1, 2011, <u>existing</u> installations may utilize Configurations 2 or 3 of Fig 5-7B or Configuration 1 in Figure 5-7A. After July 1, 2011, installations must comply with Configuration 3 in Figure 5-7B or Configuration 1 in Fig. 5-7A).



Note: The emergency shutoff valve in configuration # 3 must be equipped for remote closure. This valve must be installed in the line downstream, as close as practical to the positive shutoff valve/excess-flow valve combination.

Figure 5-7B: Liquid Outlet Valves on Containers with Water Capacity Greater Than 4,000 Gallons in Existing Installations

# 5.2 Product Control Measures in Transfer Piping

#### 5.2.1 Manifolded and Remotely Filled Containers

The containers in some LP-Gas facilities, especially in bulk plants, may be remotely filled with an inlet manifold connected to one or more containers. The vapor withdrawal or liquid withdrawal from containers may also be through a common manifold. In such cases, there are several appurtenance requirements to control the potential release of product.

If the facility contains a liquid transfer line header (manifold) 1½-inch diameter or larger, and a pressure equalizing vapor line that is 1¼-inch diameter or larger, then continue with the analysis in this section by completing Form 5.3, Form 5.4 and Form 5.5. Otherwise, skip this section and go to section 5.3. Note: Container appurtenances shown are illustrative of product control equipment only. See NFPA 58 for all container appurtenances required. Illustrations are not intended to be used for system design purposes.

Form 5.3
Requirements for Transfer Lines of 1½-inch Diameter or Larger,
Liquid-into-Containers

A	В	С	D	E	F
Item #	Appurtenance (Either No. 1	Appurtenance Provided with the	Installed in the facility?		NFPA 58 Section
#	or No. 2)**	Feature	Yes	No	Reference (2017 edition)
		Installed within 20 ft. of lineal pipe from the nearest end of the hose or swivel-type connections.	X		6.12.2
		Automatic shutoff through thermal (fire) actuation element with maximum melting point of 250 °F	X		6.12.6
	Emergency shutoff valve	Temperature sensitive element (fusible link) installed within 5 ft from the nearest end of the hose or swivel type piping connected to liquid transfer line.	X		6.12.6
		Manually operated remote shutoff feature provided for ESV.	X		6.12.12.1
1	(ESV) (Ref § 6.12)	Manual shutoff device provided at a remote location, not less than 25 ft., and not more than 100 ft. from the ESV in the path of egress.	X		6.12.12.2
	(Ref § 0.12)	An ESV is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of size 1½ inch in diameter or larger on the other side.	X		6.12.5 and 6.19.2.6 (1)
		Breakaway protection is provided such that in any pull-away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8

Form 5.3 (continued)

Item	Appurtenance	Appurtenance Provided with the	Installed in the facility?		NFPA 58 Section
#		Feature		No	Reference (2017 edition)
		Installed downstream of the hose or swivel-type connection	х		6.12.3
		BCK is designed for this specific application.	X		6.12.4
2	Backflow check valve (BCK)**	A BCK is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1½ inch in diameter or larger on the other side.	X		6.12.5
		Breakaway protection is provided such that in any pull-away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8
3	Debris Protection++	Liquid inlet piping is designed or equipped to prevent debris and foreign material from entering the system.	Х		6.19.2.5
4	Emergency discharge control	Flow through facility hose used to transfer LP-Gas from non-metered cargo tank vehicle into containers will stop within 20 seconds of a complete hose separation without human intervention.	X		6.19.2.6 (3)

<sup>\*\*</sup> In lieu of an emergency shutoff valve, the backflow check valve (BCK) is only permitted when flow is only into the container and shall have a metal-to-metal seat or a primary resilient seat with metal backup, not hinged with a combustible material (6.12.3, 6.12.4).

<sup>++</sup> Retrofit required for existing facilities by July 1, 2011.

**Liquid Withdrawal From Containers** 

A	В	С	D	E	F
Item	Appurtenance	Appurtenance Provided with the Feature	Installed in the facility?		NFPA 58 Section
#		**	Yes	No	Reference (2017 Edition)
		Installed within 20 ft. of lineal pipe from the nearest end of the hose or swivel-type connections.	X		6.12.2
		Automatic shutoff through thermal (fire) actuation element with maximum melting point of 250 °F.	X		6.12.6
	Emergency shutoff valve (ESV) (Ref § 6.12)	Temperature sensitive element installed within 5 ft from the nearest end of the hose or swivel type piping connected to liquid transfer line.	X		6.12.6
		Manually operated remote shutoff feature provided for ESV.	X		6.12.12.1
1		Manual shutoff device provided at a remote location, not less than 25 ft., and not more than 100 ft. from the ESV in the path of egress.	X		6.12.12.2
		An ESV is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1½ inch in diameter or larger on the other side.	X		6.12.5 and 6.19.2.6 (1)
		Breakaway protection is provided such that in any pull-away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8
		Number of ESV's in liquid withdrawal service			

Note: If more than one ESV is installed in the facility, use one Form 5.4 for each ESV.

Form 5.5
Requirements for Vapor Transfer Lines 11/4-inch Diameter or Larger

A	В	C	D	E	F
Item #	Appurtenance	Appurtenance Provided with the Feature	Installed in the facility?		NFPA 58 Section Reference
Ħ			Yes	No	(2017 edition)
		Installed within 20 ft. of lineal pipe from the nearest end of the hose or swivel-type connections.	X		6.12.2
		Automatic shutoff through thermal (fire) actuation element with maximum melting point of 250 °F	X		6.12.6
		Temperature sensitive element installed within 5 ft from the nearest end of the hose or swivel type piping connected to liquid transfer line.	X		6.12.6
	Emergency	Manually operated remote shutoff feature provided for ESV.	X		6.12.12.1
1	shutoff valve (ESV) (Ref § 6.12)	Manual shutoff device provided at a remote location, not less than 25 ft., and not more than 100 ft. from the ESV in the path of egress.	Х		6.12.12.2
		An ESV is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1-1/4 inch in diameter or larger on the other side.	X		6.12.5 and 6.19.2.6 (1)
		Breakaway protection is provided such that in any pull- away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	Х		6.12.8
		Installed downstream of the hose or swivel-type connection	X		6.12.3
	2	BCK is designed for this specific application.	X		6.12.4
2	Backflow check valve (BCK)**	A BCK is installed on each leg of a multi leg piping each of which is connected to a hose or a swivel type connection on one side and to a header of 1-1/4 inch in diameter or larger on the other side.	X		6.12.5
		Breakaway protection is provided such that in any pull- away break will occur on the hose or swivel-type connection side while retaining intact the valves and piping on the plant side.	X		6.12.8

In lieu of an emergency shutoff valve, the backflow check valve (BCK) is only permitted when flow is only into the container and it shall have a metal-to-metal seat or a primary resilient seat with metal backup, not hinged with a combustible material (6.12.3, 6.12.4).

If a checkmark is made in the "No" column of any one of Form 5.3, Form 5.4 or Form 5.5, then these items must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

If the LP-Gas facility is designed using ALTERNATE PROVISIONS for the installation of ASME CONTAINERS, then continue the analysis below. Otherwise skip section 5.3 and go to Chapter 6.

#### 5.4 Alternate Provisions for the Installation of ASME Containers

Facilities may be provided with redundant fail-safe product control measures (section 5.3.1) and incorporate equipment designed for low emissions during transfer operations (section 5.3.2). These types of (redundant and fail-safe) product control measures and low emission transfer equipment provide additional safety and qualify the facility for the following benefits:

- Reduced separation distances from adjacent properties, and
- Mitigation of the need for special protection requirements.

Note that the reduced separation distance applies only to underground and mounded containers 2,001 through 30,000 gallons where all the requirements of NFPA 58 Section 6.28 (summarized in Forms 5.6 and 5.7) are complied with.

# 5.3.3 <u>ASME Container Appurtenances and Redundant Fail-Safe Product Control Systems</u>

If the facility incorporates redundant, fail-safe equipment, complete Form 5.6 below. The evaluation will indicate whether the design of the facility complies with the requirements for redundant and fail-safe product control systems. If redundant, fail-safe equipment are not provided, skip this section.

Form 5.6 Evaluation of Redundant Fail-Safe Design

A		В	C	D	E	F
I t	Description		_	Installed in the facility?		NFPA 58 Section
e m #			Features	Yes	No	Reference (2017 edition)
1	Container sizes for which the appurtenances are provided		Appurtenances and redundant fail-safe equipment are provided for <u>each</u> container of water capacity 2,001 gal. through 30,000 gal.	X		6.28.3 and 6.28.4
2	Liquid or vapor withdrawal (1-1/4 in. or larger)		Internal valve having internal excess-flow valve	X		6.28.3.1 and 6.28.3.2
			Positive shutoff valve installed as close as practical to the internal valve	X		6.28.3.4
3	Liquid or vapor inlet		Internal valve having internal excess-flow valve or backflow check valve	X		6.28.3.5
			Positive shutoff valve installed as close as possible to the internal valve or the backflow check valve	X		6.28.3.5
4	Railcar transfer	Flow into or out of railroad tank car	Approved emergency shutoff valves installed in the transfer hose or the swivel-type piping at the tank car end	N/A	N/A	6.19.2.6 (1) and 6.28.4
		Flow only into railroad tank car	Approved emergency shutoff valve or backflow check valve installed in the transfer hose or the swivel-type piping at the tank car end	N/A	N/A	6.19.2.6 (2) and 6.28.4
5	Cargo tank transfer		Protection provided in accordance with 6.12	X		6.28.4.1
	Automatic closure of all primary valves (IV & ESV) in an emergency		By thermal (Fire) actuation	X		6.28.4.2
6			Actuated by a hose pull-away due to vehicle motion	Х		6.28.4.2
	Manually operated remote shutdown of IV and ESV		Remote shutdown station within 15 ft of the point of transfer	X		6.28.4.3 (A)
			Another remote shutdown station between 25 ft and 100 ft of the transfer point	X		6.28.4.3 (B)
7			Shutdown stations will shut down electrical power supply to the transfer equipment and shut down all primary valves (Internal & Emergency Valves).	X		6.28.4.3
			Signs complying with the requirements of 6.28.4.3 (C) provided	X		6.28.4.3 (C)

Note: If the facility does not have a rail terminal, write the word NA in both the "Yes" column and the "No" column in item 4 of this Form in the railroad tank car row. Similar option is also available if there is no cargo tank vehicle transfer station.

If the LP-Gas facility is provided with LOW EMISSION TRANSFER EQUIPMENT, then continue the analysis below. Otherwise skip section 5.3.2 and go to Chapter 6.

#### 5.3.4 Low Emission Transfer Equipment

If the facility is designed with low emission transfer hoses and associated equipment, complete Form 5.7 below. Compliance with Section 6.28.5 of NFPA 58 results in a 50% reduction in the separation distances between transfer points described in Table 6.5.2.1 and Section 6.25.4.3. If the facility does not have low emission transfer equipment engineered into the facility design, skip this section.

Form 5.7
Evaluation of Low Emission Transfer Equipment

A	В	С			E	F
I t e	Description	Features			alled the lity?	NFPA 58 Section Reference (2017 Edition)
m #					No	
1	Transfer into permanently mounted ASME containers on vehicles	Delivery nozzle and filler valve- Max. liquid release after transfer of 4 cm <sup>3</sup> (0.24 in <sup>3</sup> ).	Fixed maximum liquid level gage not used during transfer operations	X		6.28.5.3 (A) & (B)
	Transfer into stationary ASME containers. delivery valve and nozzle combination	During product transfer or post transfer uncoupling of the hose, liquid product volume released to the atmosphere	Does not exceed 4 cm <sup>3</sup> (0.24 in <sup>3</sup> ) from a hose of nominal size 1 in or smaller	N/A	N/A	6.28.5.4 (A)
2			Does not exceed 15 cm <sup>3</sup> (0.91 in <sup>3</sup> ) from a hose of nominal size larger than 1 in.	Х		6.28.5.4 (B)
3	Transfer into stationary ASME containers	Do containers of less than 2,001 gal (w.c.) have an overfilling prevention device or another approved device?			N/A	6.28.5.4 (F)
	maximum filling limit	Do containers 2,001 gal (w.c.) or greater have a float gage or other non-venting device?				6.28.5.4 (E)
4	Transfer into stationary ASME containers fixed maximum liquid level gage  Not used during routine transfer operations but used to calibrate other non-venting liquid level gages in the container			N/A	N/A	6.28.5.4 (C) & (D)

**Note:** 1) If the facility does not have a particular feature described in items 2 or 3, write "NA" in both the "Yes" and "No" columns corresponding to its row.

If separation distance reductions are intended, checkmarks made in the "No" column of either Form 5.6 or Form 5.7 must be addressed and brought into compliance with the specific edition of NFPA 58 that the facility was constructed to.

### **CHAPTER 6**

## **Analysis of Local Conditions of Hazard**

## 6.4 Physical Protection Measures

Protection should be provided for LP-gas facilities, systems and appurtenances against the risk of tampering and from the accidental collision of vehicles with containers and/or transfer lines. Requirements to prevent such tampering or accidents are specified in the code. Compliance requirements for the facility are indicated in Form 6.1. Complete all forms in this chapter. (**NOTE:** See NFPA 58 for complete requirements.)

Form 6.1 Evaluation of Physical Protection and Other Measures

A	В	C	D	E	F
#	Item	Features	Installed in the facility?		NFPA 58 Section Reference
			Yes	No	(2017 Edition)
1	Lighting <sup>‡</sup>	Provide lighting for nighttime operations to illuminate storage containers, container being loaded, control valves, and other equipment	X		6.19.5
2	Vehicle impact protection	Protection against vehicular (traffic) impacts on containers, transfer piping and other appurtenances is designed and provided commensurate with the size of vehicles and type of traffic in the facility. (Example protection systems include but not limited to (1) Guard rails, (2) Steel bollards or crash posts, (3) Raised sidewalks.	X		6.6.1.2 and 6.9.3.10
3	Protection against corrosion	Provide protection against corrosion where piping is in contact with supports or corrosion causing substances.	X		6.9.3.11, 6.9.3.14, and 6.17
		Complete only 4A or 4B			
		Is an industrial type or chain link fence of at least 6 ft high or equivalent protection provided to enclose (all around) container appurtenances, pumping equipment, loading and unloading and container filling facilities?	X		6.19.4.2
4 <b>A</b>	Perimeter Fence	Are at least two means of emergency egress (gates) from the enclosure provided?  NOTE: Write "N.A." (not applicable) if  (iii) The area enclosed is less than 100 ft², or  (iv) The point of transfer is within 3 ft of the gate, or containers are not filled within the enclosure	N/A	N/A	6.19.4.2 (A)
		Is a clearance of at least 3 feet all around to allow emergency access to the required means of egress provided?	X		6.19.4.2 (B)
	Guard Service	If a guard service is provided, does this service cover the LP-Gas plant and are the guard personnel provided with appropriate LP-Gas related training, per section 4.4 of NFPA 58?	N/A	N/A	6.19.4.3
4 B	Lock-in-Place devices	Are Lock-in-Place devices provided to prevent unauthorized use or operation of any container appurtenance, system valves, or equipment in lieu of the fence requirements above?	X		6.19.4.2 (C)

**Note:** Fill only items 1, 2, 3, and 4A or 4B. Indicate with "NA" when not filling the "Yes" or "No" column. ‡ Indicate with "NA" if the facility is not operated at night.

## 6.5 Ignition Sources and Control

The potential for the ignition of LP-Gas vapors released in a facility is reduced by eliminating as many ignition sources as possible, designing electrical equipment to reduce or eliminate sparking and ensuring that during transfer operations known ignition sources are turned off. The ignition source control involves both passive methods as well active methods. Form 6.2 is used to evaluate whether your facility satisfies the code requirements for ignition source control. — (NOTE: See NFPA 58 for complete requirements.)

Form 6.2
Assessment of Sources of Ignition and Adjacent Combustible Materials

A	В	C	D	E	
#	Sources of Ignition and Requirements Pertaining to Adjacent Combustible		Facility pliant?	NFPA 58 Section	
п	Materials	Yes	No	Reference (2017 Edition)	
1	Are combustible materials not closer than 10 ft. from each container?	X		6.4.4.3	
2	Is a distance at least 20 ft. provided between containers and tanks containing flammable liquids with flash point less than 200 °F (ex., gasoline, diesel)?	N/A	N/A	6.4.4.6	
3	Are electrical equipment and wiring installed per Code requirements?	X		6.23.2	
4	Is open flame equipment located and used according to Code?	X		6.23.3.1	
5	Are ignition control procedures and requirements during liquid transfer operations complied with?	X		7.2.3.2	
6	Is an approved, portable, dry chemical fire extinguisher of minimum capacity 18 Lbs. and having a B:C rating provided in the facility?	X		6.27.4.2	
7	Is an approved, portable, dry chemical fire extinguisher of minimum capacity 18 Lbs. and having a B:C rating provided on each truck or trailer used to transport propane?	X		9.3.5 and 9.4.7	
8	Is the prohibition on smoking within the facility premises strictly enforced?	X		7.2.3.2 (B) and 9.4.10	

Note: Insert "NA" in both "Yes" and "No" columns of any items that are not applicable.

## 6.6 Separation Distances

## 6.6.1 Separation Distances between Container and Important Buildings, Other Properties and Transfer Points

The separation distance provisions in NFPA 58 are minimum requirements and are intended to buy time in an emergency and to implement appropriate response. The requirements are dependent upon the size of the container. Complete the appropriate section of Form 6.3. (**NOTE:** See NFPA 58 for complete requirements.)

Form 6.3
Separation Distances from Containers to Buildings, Property Lines that can be Built upon, Inter-container Distances, and Aboveground Flammable or Combustible Storage Tanks

A	В	C	D	E	F	G
	Container Size	Size Separation between			Facility pliant?	NFPA 58 Section
#	Range in gal (W.C.)	other property and the <u>nearest</u> container which is	Distance (ft)	Yes	No	Reference (2017 Edition)
1	501 through	Aboveground	25	N/A	N/A	6.3.1, 6.3.2 and Table 6.3.1.1
	2,000	Underground or Mounded	10	N/A	N/A	
		Between containers	3	N/A	N/A	
	2,001	Aboveground	50	X		
2	through	Underground or Mounded	50	N/A	N/A	
	30,000	Between containers	5	N/A	N/A	
		Aboveground	75	N/A	N/A	
		Underground or Mounded	50			
3	30,001 through 70,000	Between containers	1/4 sum of diameters of adjacent containers	N/A	N/a	
		Aboveground	100	N/A	N/A	
		Underground or Mounded	50	N/A	N/A	
4	70,001 through 90,000	Between containers	1/4 sum of diameters of adjacent containers	N/A	N/A	
5	All sizes greater than 125 gal	Separation distance between an aboveground LP-Gas container and an aboveground storage tank containing flammable or combustible liquids of flash points below 200 °F.	20	N/A	N/A	6.4.4.6 and 6.4.4.7

If the LP-Gas plant is provided with every one of the redundant and fail- safe product control-design equipment indicated in Form 5.6, then the minimum distance in column D of Form 6.3 can be reduced to 10 feet for underground and mounded containers of water capacity 2,001 gal to 30,000

**Note:** If any of the container sizes indicated in the above form are not present in the facility, enter "NA" in both Yes and No columns.

#### 6.6.2 Separation Distances between Transfer Points and other Exposures

If the liquid transfer point is not on the container but is at a remote location complete Form 6.4. **Do not complete Form 6.4 when the filling is through a container valve.** 

(NOTE: See NFPA 58 for complete requirements.)

Form 6.4
Separation Distances between Points of Transfer and other Exposures

A		3	C	D	E	F	G	
#	Type of Exposure within or outside the facility boundary		Check if exposure	Minimum Distance	Is the Facility compliant?		NFPA 58 Section	
,,			is present	(ft)	Yes	No	Reference (2017 Edition)	
	Buildings, mobile homes,				X		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
1	and modular homes with walls	at least 1-hour fire-rated		10				
2	Buildings with other than walls	at least 1-hour fire-rated		25	X			
3	Building wall openings of level of the point of trans			25	X			
4	Line of adjoining propert			25	X			
5	Outdoor places of public school yards, athletic field		50	X				
6	Public ways, including public streets, highways,	From points of transfer in LP-Gas dispensing stations and at vehicle fuel dispensers.		10	X		Section 6.5.2 and Table 6.5.2.1	
	thoroughfares, and sidewalks	From other points of transfer		25	X			
7	Driveways			5	X			
8	Mainline railroad track ce			25	X			
9	Containers other than tho			10	X			
10	Flammable and Class II c dispensers and the fill con stationary containers		10	X				
11	Flammable and Class II c aboveground containers a underground containers		20	X				
12	LP-Gas dispensing device Class I liquid dispensing			10	X		6.25.4.3	

**NOTE:** Place a checkmark in column C against an exposure that is present in or around the facility. Fill columns E or F for only those rows for which there is a checkmark in column C.

If the facility contains low emission transfer equipment (i.e, all equipment identified in Form 5.7 are installed and are in working order), then the minimum separation distances in column D of Form 6.4 can be reduced to one half of the indicated values.

If the containers in the LP-Gas facility are provided with SPECIAL PROTECTION MEASURES, then continue the analysis below. Otherwise skip Forms 6.5 and 6.6 and go to Section 6.5. Also see Chapter 9.

### 6.6 Special Protection

In the event that a proposed installation is adjacent to a property containing extremely high combustible fuels and the location of the storage containers is such that exposure of the containers to a fire on the adjacent property would severely impact the integrity of the containers, special protection methods may be utilized to reduce the exposure hazard to the containers. Installed special protection systems must comply with section 6.27.5 of NFPA 58, which addresses both passive and active protection systems.

- Passive approaches include insulating the outside of the containers, mounding above grade or burying the container.
- Active special protection includes fixed water spray systems or placement of monitor nozzles at strategic locations with respect to the containers to be protected.

Complete form 6.5 to determine compliance of the installation with the code. Similarly, Form 6.6 indicates the requirements for active protection. This Form also should be completed as part of the fire safety analysis process.

(NOTE: See NFPA 58 for complete requirements.)

Form 6.5
Special Protection Measures –Passive Systems

A	В	C	D		E	
#	Special Protection	Question	Is the F		NFPA 58 Section	
#	# Protection Option	Question	Yes	No	Reference (2017 Edition)	
	Container Insulation	Insulation provided on each of the containers?		X	6.27.5.1	
1	Container insulation	Insulation material complies with the requirements of NFPA 58?	NA	NA	6.27.5.1 and 6.27.5.2	
		Each container in the facility is mounded?	NA	NA	6.27.5.3	
2	Mounding of containers	Mounding complies with each requirement under section 6.6.6.3 of NFPA 58.	NA	NA	6.6.6.3 and 6.27.5.3	
		Each container in the facility is buried?	NA	NA	6.27.5.4	
3	Burying of containers	Buried containers comply with each requirement under section 6.6.6.1 of NFPA 58.	NA	NA	6.6.6.1 and 6.27.5.4	

Form 6.6
Special Protection Measures –Active Systems

#	Special	O		Facility bliant?	NFPA 58 Section
#	Protection Option	Question	Yes	No	Reference (2017 Edition)
		Are fixed water spray systems, complying with NFPA 15 <sup>1</sup> requirements, used for each container in the facility?		X	_ 6.27.6.1
1	Water spray systems	Do fire responsive devices actuate water spray system automatically?		X	6.27.6.2
		Can the water spray systems be actuated manually also?		X	6.27.6.2
	Monitor nozzle	Are the monitor nozzles located and arranged so that the water stream can wet the surfaces of all containers exposed to a fire?		X	6.27.6.3
2		Can the water stream from a monitor nozzle reach and wet the entire surface of, at least, one half of a length from one end of each of the containers it is designed to protect? <sup>1</sup>		X	6.27.6.3
	systems	Do fixed monitor nozzles comply with NFPA 15 <sup>2</sup> requirements?		X	6.27.6.1
	2	Do fire responsive devices actuate the monitor nozzles?		X	6.27.6.2
		Can the monitor nozzles can be actuated manually also?		X	6.27.6.2

<sup>3.</sup> See discussion in Section 8.2

## 6.7 <u>Vehicular Protection</u>

In the event that an installation is located where an immediate threat due to vehicular traffic is present, a barrier or other suitable protection may be necessary.

Form 6.7
Protection Against Vehicular Impact

#	# System Protected		ysical ection ided?	Type of physical protection installed	NFPA 58 Section Reference (2017 Edition)
		Yes	No		
1	Storage containers	X		Posts or Jersey barriers	
2	Transfer stations	X		Posts or Jersey Barriers	6.6.1.2, 6.6.6.1(B), 6.6.6.1(C), 6.9.3.10, and 6.25.3.13
3	Entryway into plant	X		Locked gate	51515116, and 512515115

<sup>4.</sup> Refer to Chapter 8 for a discussion on NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection

#### **CHAPTER 7**

## **Exposure To and From Other Properties, Population Density**

## 7.3 Exposure to Off-Site Properties and Persons From In-Plant Propane Releases

<u>Types of Propane Fires</u>: A propane release inside the LP-Gas facility may affect adjacent properties and off-site populations if the release is of a sufficiently large size. An immediately ignited release will result in a local fire. Depending upon the characteristics of the release and ignition two types of local fires can occur, namely, a pool fire on any liquid pool of propane on the ground or a burning rising fireball.

If the released propane is not immediately ignited, then a dispersing cloud (or plume) of vapor will form. The cloud or plume will move in the direction of the wind. Because of the mixing of air with the dispersing propane, propane concentration decreases continuously both with downwind distance as well as in the crosswind direction. This cloud or plume can be ignited at any distance downwind by an ignition source when the concentration at the point of ignition is within the Lower Flammability Limit (LFL) to Upper Flammability Limit (UFL) range. For propane the range of flammable concentrations in air is between 2.15% and 9.6% by volume.

Ignition of a dispersing vapor cloud or plume may result in a flashback type of vapor fire. In extremely rare cases, and only when the physical conditions are conducive, with partial or full confinement of the propane-air mixture of proper concentration and its ignition, a vapor explosion can occur, resulting in a blast wave. If the dispersing cloud is not ignited it poses no hazard to the surrounding area.

Propane vapor at ambient pressure and temperature is heavier than air. Hence, any vapor released will tend to flow towards and accumulate in low-lying areas adjacent to the release location. If a building or other semi-confined area exists adjacent to the release location wherein the vapor can accumulate in the lower parts of the building, a potential explosion hazard will result.

**Hazardous Effects of a Fire**: The effect of a propane fire on an off-site property will depend on the type and material of construction of the structure and its distance from the fire and fire size. Similarly, the number of off-site persons adversely impacted by a fire inside a LP-Gas facility will also depend on, (in addition to the characteristics of the fire and the distance between the fire and the population) the type of population, the timeliness of notification, the effectiveness of the evacuation planning and implementation, etc.

**Release Cases**: In this manual, a number of mathematical models were developed for credible accident scenarios, to describe the effects of the release of propane inside LP-Gas facilities and its subsequent behavior. These models were used to calculate potential hazard areas for each scenario of release. Each potential release discussed has very low probability of occurrence. However, because of the flammability of propane, such releases may pose hazards. The hazard distance (to a

property outside the facility boundary or to off-site persons) from a propane release within the facility will depend on the size and duration of release, and the type of fire that occurs.

The calculated distance to which a hazard extends under each scenario of release and for each hazard behavior is indicated in Table 7.1.

To assess the hazards posed to offsite population from in-plant releases of propane it is necessary to:

- 1. Note the type of occupancies surrounding the facility, and
- 2. Describe in detail the characteristics and density of the population surrounding the facility.

To evaluate the impact on the surrounding population from an in-plant propane release, complete Form 7.2 using the results indicated in Table 7.1.

Table 7.1

Distances to Various Types of Propane Hazards Under Different Release Models\*\*

Model #	Details of the Propane Release Model Releases from or due to		Vapor Dispersion Distance to LFL (ft)	Explosion Hazard Distance (ft)	Fire Bal Radiation Distance (ft)
1a	Bobtail hose failure.	1" ID x 150 ft hose length	250	110	50
1b	Release of the entire inventory in the hose,	1" ID x 120 ft hose length	230	103	45
1c	quickly.	1" ID x 75 ft hose length	190	90	40
2a		Release of the inventory in a transfer piping 1" x 30 ft  @ 20 gpm for 10 min., due to failed excess flow valve.			
2b	Release of the inventory in a @80 gpm for 10 mins.	230	252	48	
2c	Release of the inventory in a @ 70 gpm for 10 mins.	328	235	74	
2d	Release of the inventory in a @80 gpm for 10 mins.	269	252	59	
2e	Release of the inventory in a @100 gpm for 10 mins.	transfer piping 3" x 30 ft	312	287	69
2f	Release of the inventory in a @100 gpm for 10 mins.	transfer piping 3" x 18 ft	256	284	55
2g	Release of the inventory in a @100 gpm for 10 mins	transfer piping 3" x 80 ft	455	284	106
2h	Release of inventory from tr 200 gpm for 10 minutes	407	410	89	
3	Release from the container p	No ignitable ground level	vapor concer	tration at	
4	Release from a 1" ID x 150 vaporizer and reduced flow flow valve @ 20 gpm for 10	250	120	50	
5	Leak from a corrosion hole i		110	120	5

	pressure of 130 psig (corresponding to 80 °F) for 60 min. Hole size is 1/4" ID.			
6a	Release of the entire inventory in a 2" ID x 20 ft., transfer hose.	195	90	40
Model #	Details of the Propane Release Model Releases from or due to	Vapor Dispersion Distance to LFL (ft)	Explosion Hazard Distance (ft)	Fire Ball Radiation Distance (ft)
6b	Release of the entire inventory in a 2.5 inch dia. transfer hose x 16 ft. length	215	98	45
6c	Release of the entire inventory in a 3-inch dia. transfer hose x 12 ft. length	230	100	46
6d	Release of the entire inventory in a 1.25-inch diameter transfer hose x 20 ft. in length	138	66	27
7a	Transport hose blow down: Hose size 2" ID, 20 ft length release for 3min., from a Transport after the tank is filled.	25	30	<5
7b	Transport hose blow down: Hose size 2.5" ID, 16 ft length release for 3min., from a Transport after the tank is filled.	25	29	<5
7c	Transport hose blow down: Hose size 3" ID, 16 ft length release for 3min., from a Transport after the tank is filled.	31	36	<5

<sup>\*\*</sup> Results from models described in Appendix B.

Form 7.1

Types of Occupancies<sup>(1)</sup> Near or Surrounding the LP-Gas Facility

Type of Occupancies	Model # from Table 7.1	Hazard Distance <sup>(2)</sup> (feet)	Is Occupancy located within the hazard distance from the Facility?	
			Yes	No
Assembly Occupancies (Places of worship, Libraries, Theaters and Auditoriums, Food or Drink Bars, Sports Stadiums, Amusement Parks, Transportation Centers, etc. with 50 or more people).				X
Institutional Occupancies (Elderly Persons Home or Nursing Home, Hospitals, Alcohol & Drug Rehabilitation Centers, Prisons)				X
Educational Occupancies (Elementary Schools, Day Care facilities, etc).				X

NOTES: (1) Different types of occupancies are defined in NFPA 5000

<sup>(2)</sup> Table 7.1 provides a number of scenarios that can result in propane release, and the resulting area exposed for different ignition mechanisms. Determine the scenarios that are applicable to the facility, for the quantities that can be released, and enter the greatest value from Table 7.1. Use the hose diameters and length that will be used at the facility if they differ from the ones in Table 7.1 and recalculate the hazard distances using a spreadsheet method that is available at npga.org. Some scenarios may not be applicable to an installation because of other mitigation measures implemented, such as a hose management procedure to minimize the possibility of hose failure.

### 7.4 Exposure to the Propane Facility From External Events

A large fire or an explosion occurring outside the plant boundary may have detrimental effects on the plant equipment, containers or electrical systems. The most likely scenario is that the LP-Gas plant equipment is affected by intense heat radiation from the external fire.

In order to assess the effects on in-plant personnel, equipment, containers and safety systems from exposure to off-site hazards it is necessary to:

- Identify industrial or other operations surrounding the LP-Gas plant and also note the type of occupancies surrounding the plant;
- Discuss with owners of facilities or operations surrounding the LP-Gas plant any potential detrimental effect due to their presence or operations upon the LP-Gas plant;
- Implement suitable precautions and develop quick notification or other effective communication system protocol between the LP-Gas plant and its neighboring industrial plants, to minimize the potential detrimental effects on a proposed LP-Gas plant from surrounding operations.

The description of the LP-Gas plant surroundings was specified in Form 4.2. Form 7.2 should be completed as a part of the Fire Safety Analysis to note any outside hazards that may affect the integrity of the LP-gas system.

Form 7.2 Exposure to LP-Gas Facility from External Hazards

A	В	C	D		
Item #	Type of Neighboring Operation		Hazard exists to the LP-Gas Facility		
n		Yes	No		
1	Petroleum and other hazardous material storage, wholesale	N/A	N/A		
1	dispensing, etc.				
2	Metal cutting, welding, and metal fabrication	N/A	N/A		
3	Industrial Manufacturing that can pose external hazards	N/A	N/A		
4	Ports, rail yards and trans-shipment terminals handling flammable and explosive materials.	N/A	N/A		
5	Other operations that may pose hazards (gasoline and other hazardous material dispensing stations, fertilizer storage, etc).	N/A	N/A		

NOTE: If a particular activity indicated in column B does not exist, fill both "Yes" and "No" columns with "NA."

Where a "Yes" has been checked in either Form 7.1 or Form 7.2:

- 3) For an existing facility, communicate this information to local emergency responders for inclusion in their emergency planning.
- 4) For a proposed facility, implement the actions indicated in Chapter 9.

External Fire Effects on LPG Containers: An evaluation of the effects of thermal radiation from fires outside the facility on LP containers in the LPG plant was conducted to provide guidance to those using this manual. (This evaluation, the associated mathematical model and detailed results with and without the effects of wind have been published in a peer reviewed technical journal)<sup>1</sup>. The maximum temperature attained by the vapor-wetted wall of a propane container exposed to heat radiation from an external, non-impinging fire was calculated for various sizes of containers. The assumptions made in regard to the size and location of the external fire included the following:

- The fire used in the model was a highly radiative liquid hydrocarbon pool fire. The value assumed for the heat radiation emanating from this liquid pool fire was greater than that from fires occurring due to the burning of wooden buildings, tires, forest trees, and other flammable liquids such as oil fires, which burn with high degree of smoke production.
- A fire diameter of 100 ft (30.5 m) was used for duration of 30 minutes. This is a very large fire.
- The edge of the fire was located at distances to buildings required by Table 6.3.1.1 of NFPA 58 and consistent with the size of the container nearest to the plant boundary.
- Convective cooling of the heated surface and the effects of reflective paint on the containers were included.
- Bending of the fire plume towards the containers due to the effects of wind was also included.

The maximum temperatures calculated for the steel surface of the container in contact with vapor in different size containers were as follows:

Container Size Gal. (W.C.)	Maximum Temperature attained in 30 min
1,000	exposure 660 °F
2,000	648 °F
4,000	507 °F
12,000	507 °F
18,000	437 °F
30,000	384 °F
60,000	340 °F

Raj, P.K., "Exposure of a liquefied gas container to an external fire," Journal of Hazardous Materials, v122, Issues 1-2, p 37-49, June 2005.

The temperature at which the yield strength of steel of a propane tank begins to decrease is close to 800 °F. Based on this, there is no threat of propane tank failure from thermal radiation from an external fire occurring at the minimum separation distances specified in Table 6.3.1.1 of NFPA 58.

#### **CHAPTER 8**

## **Evaluation of Fire Services and Water Supply Requirements**

In this chapter the procedure for evaluating the capability and resources of the local fire department (FD) that would respond to an emergency at the LP-Gas facility is discussed. This evaluation includes the training of FD personnel, availability of suitable fire apparatus and equipment, and determination of water requirements if such a system were to be installed at the facility.

#### 8.4 Details of the Fire Service

Use Form 8.1 to record the relevant data on personnel and resources from the local FD or fire company that is responsible for the area where the LP-Gas facility is located. This is a good opportunity to establish a working relationship with the fire department as you will need their support as you go forward with this planning and evaluation process and they will need to understand the facility to provide maximum assistance should an incident occur at the facility.

Analyzing the data from Form 8.1: The designation of the fire fighters as career personnel or volunteers has no bearing on the expertise of the department. The purpose of items 4 and 5 in Form 8.1 is to help determine how fast the initial help might be available. Career fire fighters are in the station and available to respond. Volunteer fire fighters may have to come from home or their place of business. Career fire fighters can normally have a piece of fire apparatus responding within one minute of receiving the call, volunteers may take 4-5 minutes to reach the station before they can respond.

Item # 6 helps determine the level of skill of the fire fighters in the fire department. NFPA 1001, Standard for Fire Fighter Professional Qualifications, defines the expertise required of a fire fighter to be qualified to Levels I and II. A Level I fire fighter can do general fire fighting tasks under close supervision and a Level II fire fighter can do those and more tasks under general supervision.

Item #7A is critical to determining if an effective operation can be conducted. For fighting a fire, at least two fire fighters are required for each 125 gpm hose line used. In addition, an incident commander, a safety officer, additional supervisory officers (depending on the size of the incident), and an operator for each piece of fire apparatus that is being used (pumping or performing some other function) is required. Also required is a rapid intervention crew (RIC) of 2 fire fighters when the first firefighting crew is deployed into a hazardous area, with that team growing to 4 fire fighters when the second and subsequent crews enter the hazardous area. The role of the RIC is to perform a rescue of one or more fire fighters that may be injured during the operation.

Item #7B and Item #7C help determine the training and knowledge of the fire fighters in hazardous materials and the specific hazards of LP-Gas. NFPA 472 is Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.

Form 8.1

Data on the Responding Fire Department

A		В	C
Item #	Data Item		Data Entry
1	Name of the Fire Departme	ent (FD).	Imperial County Fire Department
2A	Name of the person in the	FD assisting with the data acquisition.	Andrew Loper
2B	Position of the person in th	e FD assisting with the data acquisition.	Fire Prevention Specialist
3A	Date on which FD data wa	s collected.	04-08-2022
3B	Name of the person collect	ing the data.	Andrew Loper
4	Number of fire fighters on	duty at any time.	3
5	Average number of fire fig	hters available for response.	3
6A	Number of fire fighters	"Fire Fighter I" level.	
6B	qualified to	"Fire Fighter II" level.	3
7A		Respond on the first alarm to the facility.	4
7B	Number of fire fighters who would:	Respond on the first alarm and who are qualified to the operations level requirements of NFPA 472 or similar local requirements	4
7C		Respond on the first alarm with specific knowledge and training on the properties of LP-Gas and LP-Gas fires.	N/A
8A	Number of fire apparatus that have the capability to deploy a 125 gpm	Are in service in the department.	27
8B	hose line supplied by onboard water for at least 4 minutes, and, which:	Would respond on a first alarm.	1

Item # 8A and Item # 8B help determine the capability of fire apparatus that will or could respond to an incident. A 125 gpm hose line is a typical hose line used for firefighting where the fire fighters are expected to advance and maneuver the line while it is flowing.

Response time: Another important consideration of the effectiveness of the Fire Department to respond to an incident is the time it takes the FD to reach the LP-Gas facility. Many fire departments have multiple fire stations or use mutual aid fire companies from other communities to assist them so resources are coming from different locations. It is therefore important to determine the total time for not only the first arriving apparatus but for subsequently arriving apparatus dispatched on the first alarm as well. You will need to work with the fire department and gather this information as well.

Using Form 8.2, determine the time for all resources that would be dispatched on the first alarm to an emergency at the facility. Start by identifying and listing in column A the fire companies that would respond on a first alarm to an emergency. Then, for each company record the time it would take to receive and handle an alarm, for the company to turnout, and the time to respond. If the fire department does not have data that can help, some good averages to use are:

- Alarm Receipt & Handling Time 1 minute for the fire department first receiving the alarm and 3 minutes for mutual aid fire departments,
- Turnout Time 1 minute if the apparatus is staffed by career fire fighters and 4 minutes if the apparatus is staffed by volunteer fire fighters,
- Travel Time 2 minutes for each mile the fire apparatus must travel in an urban/suburban setting and 1.5 minutes for each mile the fire apparatus must travel in a rural setting.

Total the times in columns B, C, and D for each company and enter the sum in Column E. This response time will give you an idea of how long it will take resources to reach the facility gate. Fire fighters must then determine the nature and severity of the emergency, determine how they are going to deal with the emergency, maybe establish a water supply from a hydrant or other source, and implement their attack. This can take anywhere from a couple of minutes to upwards of 30 minutes.

## 8.5 Water Needs and Availability

The requirements for water to cool a container exposed to a fire are indicated in NFPA 15. A flow rate of 0.25 gpm/ft² (10 liter/min/m²) is specified as being adequate to cool a LP-Gas container exposed to a fire. Since a majority of the containers in the LP-Gas facilities have container penetration for liquid inflow or liquid outflow at only one end of the container and since any product leak occurring at one end and a subsequent fire will affect only the end zone of a container, it has been assumed that the container surface within only one half length of the container needs to be cooled for an effective prevention of damage to the container. Also, calculate the total volume of water required on the basis of a stream flow time of 10 minutes.

Based on these parameters and the surface area of various size ASME containers, the cooling water rate requirements for each container size are determined using Form 8.3. Complete Form 8.6 with information relevant to the facility. Start by identifying the largest container at the facility. Assume that a fire occurs at the end of that container where the appurtenances for

product inflow and outflow are located, and determine whether other containers are within 50 feet of this largest container.

Identify the largest container at the facility and all stationary containers within 50 feet of the largest container. Record in column F of Form 8.3 the largest container. Next, record in Column F the two containers that are within 50 feet of the largest, and which have the most surface area exposed to the end of the largest container at which the appurtenances are installed. These are the containers, which are most likely to be affected by a fire occurring at the appurtenances of the largest container. Multiply the number of containers recorded in Column F by the required water flow rate per container in Column E and enters the result in Column G. Sum the values in Column G and enter the sum in Cell 2a, Column G. Round this number up to the next multiple of 125 (i.e. 725 gpm would round up to 750 gpm). This is done because the application of water by the fire department is generally going to be in increments of 125 gpm. Enter that figure in Cell 2b, Column G.

You have now determined the application rate for cooling water that is necessary if the largest container is subjected to fire. Add 250 gpm (Cell 3, Column G) for use by fire fighters to protect personnel when approaching the container or its valves to control the flow of product. Sum the numbers in Cells 2b and 3 of Column G. Enter that number in Cell 4, Column G.

To determine the total volume of water required for a 10-minute application time, multiply the total water flow rate in Cell 4, Column G by 10 and enter that figure into Cell 4, Column H.

Form 8.2

Response Time data for the Fire Departments

В	C	D	E			
Time in Minutes for						
Alarm Receipt & Handling	Turnout	Travel	Total Time			
N/A	1.34	5.00	6.34			
	Alarm Receipt & Handling	Alarm Receipt & Handling Turnout	Time in Minutes for  Alarm Receipt & Handling Turnout Travel			

Note: Number in Column E = Sum of numbers from Columns B through D.

Form 8.3

Water Flow Rate and Total Water Volume Required to Cool Containers Exposed to a Fire

A	В	С	D	E	F	G	Н
Item #	ASME Container Size (gallons)	Total Surface Area of each Container <sup>1</sup> (ft <sup>2</sup> )	Surface Area of each container to be Cooled (ft²)	Water flow rate required per container (gpm)	Number of containers of the size indicated?	Total Water flow rate required (gpm)	Total volume of water required for 10 min (gal)
	500	86	43	10.8	0		C70206
	1,000	172	86	21.5	0		Height war
	2,000	290	145	36.3	0		A TOTAL ST
	4,000	374	187	46.8	0		100
	6,500	570	285	71.3	0		delso, -
	9,200	790	395	98.8	0		n sweet .
1	12,000	990	495	123.8	0		HERD SEC.
	18,000	1,160	580	145.0	0		or size
	30,000	1,610	805	201.3	1	203.1	
	45,000	2,366	1,183	295.8	0		
	60,000	3,090	1,545	386.3	0		
	90,000	4,600	2,300	575.0	0		
	Other Size						
2a	Calculated was	ater flow rate for tection	-	non-stone par	mercel person	203.1	
2b	Water flow ranearest multip	ate rounded up to ple of 125			come to to ea		DE STATE OF
3	Water for fire protection, if				Stud function	250	100
4	Total water fl volume	ow rate and			of most day	453.1	4531.00

**Note:** Column D = (1/2) x Column C

Column  $E = 0.25 \text{ (gpm/ft}^2) \times \text{Column D}$ ;

Column G = Column F x Column E

Column  $H = 10 \times Column G$ 

Line 2a, Column G and Column H are the sum of numbers in each row above line 2 of each column.

Line 4, Column G and Column H are the sum of numbers in rows 2b and 3.

- Consider only 3 containers for water supply evaluations even if the number of containers in a group is more than 3. See Section 8.2.
- 1 ASME container approximate dimensions

The total water requirement for the facility is indicated in item 4, column G (water flow rate) and column H (total water volume or quantity) of Form 8.3. If multiple groups of containers are present in the facility, repeat the calculations in Form 8.3 for each group of containers. The total water requirement for the facility is the largest value for any single group of containers.

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#### Water Availability Evaluation

If a water system is installed, Form 8.3 calculates the total water requirement for a 10-minute duration. This time period allows for manual shutdown, rescue of any injured, and the possibility of dispersing unignited gas.

If there is a public or private water supply with hydrants available within 1000 feet of the container or containers on which water will be applied, determine the available flow rate from that system with 20 psi residual pressure. The water company may have flow test data or it may be necessary to conduct flow tests. If that flow rate is equal to or greater than the needed flow rate determined using Form 8.3, you can assume your water supply is adequate. If the hydrant flow rate is less than the needed flow rate, determine what other sources of water are available. Sources fall into two categories: water on fire apparatus responding to the incident, and water in rivers, ponds or lakes near the facility. Start by talking with the fire department about whether they have a tanker shuttle capability. Some departments have well-organized operations that can deliver 250 gpm or more on a continuous basis using tanker shuttles. This may be the only capability available or it may be a supplement to a weak hydrant system. Be sure to determine how long it would take to get the water shuttle established.

If there is a river, pond or lake in the area, the fire department may be capable of drafting from that water source and pumping water through hose lines to the facility. There are a number of things that need to be considered before relying on this type of water supply.

- 6. Can a fire apparatus get close enough to the water source to reach the water with the suction hose it carries (normally 20 feet) and not have the lift (distance from the surface of the water to the center of the pump) greater than 10 feet?
- 7. Is the water source available year round? Does it dry up in the summer or freeze in the winter? The strainer on the suction hose needs to be at least 2 feet below the surface of the water.
- 8. Is the water source of adequate size or flow to supply the water needed?
- 9. Does the fire department have the hose and pumping apparatus to relay the water from the source to the fire?
- 10. How long will it take to set up this relay?

These factors should be evaluated and discussed with the fire department before any decision is made to use such a supply. It might also be useful to have the fire department conduct an actual timed drill to deliver the needed water supply to the facility site using the normally responding complement of personnel and equipment.

Complete Form 8.4 to document the water supply that will be available to the facility site.

Form 8.4
Evaluation of Water Availability in or Near the LP-Gas Facility

A	В	C			D		
Item #	Water from	Ava	ilable?	Quantitative information			
1	Public supply or from another piped-in supply through one or more fire hydrants in or near the	X Yes	□ No	Hydrant data	Distance from Container(s) on which water will be applied (feet)	Available water flow rate from all hydrants <sup>(1)</sup> (gpm)	
	facility			Hydrant 1	800	1250	
				Hydrant 2	Aprox 1000		
				Hydrant 3	0		
	A magular static victor course			Distance to	water source =	0 Feet	
2	A nearby static water source (stream, pond, lake, etc).	☐ Yes	X No	Time to set up relay = 0 min.			
				Rate of delivery = 0 gpm			
3	Only through mobile water tanker shuttle.	□ Yes	X No	Time to set up shuttle = 0 min. Sustainable flow rate = 0 gpm			

<sup>(1)</sup> Obtain the available flow rate from the local municipal water authority or the entity that supplies water to the hydrant or conduct a test to determine total available flow rate.

Having the water available does not guarantee that the fire department has the resources to apply the water in a timely manner. Completed Form 8.2 will indicate how much time it will take for the fire department to have initial resources at the facility and how long before additional resources will be on-site. If the capability to apply cooling water within the first 10 minutes of initial fire exposure to the container is not present, extremely dangerous conditions could begin to develop. Note that it will take several minutes after the apparatus arrives at the facility gate before cooling water is actually applied to the containers and that hand held hose lines will be used with water supplied from the water tank on the apparatus. Even if hydrants are available, the staffing on the first arriving fire apparatus will probably not be sufficient to establish a water-supply from the hydrant. Depending on the hydrant system and the fire department's standard operating guidelines, it may be necessary to connect a pumper to the hydrant. If the distance is over 1000 ft. it may also be necessary to use hose from more than one fire apparatus to reach the hydrant and in some cases, to use intermediate pumpers in the hose line to boost the pressure.

Form 8.1 contains information on responding apparatus capable of applying 125 gpm for 4 minutes. This is adequate to begin operations for a single container of 30,000 gallons or less water capacity if no other adjacent containers are exposed to the fire. However, a continuous water supply then has to be established within that 4 minutes or other apparatus must be available with onboard water to continue the cooling until a continuous water supply is set up. A larger facility or multiple containers exposing each other is a different situation. In those cases, cooling water may need to be applied using larger hand held hose lines or ground monitors to achieve the reach necessary with the water stream. Both of these require considerably more water than may be supplied by 125 gpm hose lines. Unless a hydrant system with an adequate flow rate is readily available, the time needed to establish an adequate water supply from remote hydrants, a relay operation from a static water source, or a sustainable tanker shuttle operation will greatly exceed the initial 10 minutes of fire exposure to the container and dangerous conditions could begin to develop. For these facilities, a fixed water spray system is the only practical means by which adequate protection can be provided to installations consisting of multiple 30,000 gallon or larger containers.

Using the data you have gathered, it is recommended that you discuss with the fire department the resources available to protect the facility. This would include evaluating the knowledge and training of the fire fighters who would be arriving at the facility.

- 1) For an existing facility, communicate this information to local responders for inclusion in their emergency planning.
- 2) For a proposed new facility, refer to Chapter 9

#### **CHAPTER 9**

## **Evaluation Summary for a Proposed New LP-Gas Facility**

In this chapter the results of analyses performed in Chapter 4 through Chapter 8 for a proposed (new) LP-Gas facility are summarized. If noncompliance with NFPA 58-2017 is found, the design must be altered to bring the proposed facility into compliance. In some cases, several alternative approaches for complying with the code are presented.

Complete Form 9.1, Form 9.2 and Form 9.3 (and if necessary, Form 9.4 and Form 9.5) and implement any necessary changes to the design to bring the new facility into compliance with the code.

Form 9.1

Analysis Summary on Product Control and Local Conditions of Hazard

A	В	C	D	E
Item #	CHAPTER Title	Section & Title	Reference FORM #	Number of "No" checked
		5.1: Product Control in Containers	5.1 or 5.2	0
	Product Control Measures in		5.3	0
1		5.2 Product Control in	5.4	0
	Containers & Transfer Piping	Transfer Piping	5.5	0.
		Transfer Fighing	5.6	0
			5.7	0
		6.1 Physical Protection Measures	6.1	0
		6.2 Ignition Source Control	6.2	0
2	Analysis of Local Conditions of Hazard	6.3.1 Separation distances; Container and outside exposures	6.3	0
		6.3.2 Separation distances; Transfer points and outside exposures	6.4	0
		6.4 Special Protection	6.5	0
		Measures	6.6	0

<sup>§</sup> The number of "No" for Forms from Chapter 5 is the difference between the required number of appurtenances according to NFPA 58-2017, and a lesser number found to be actually installed on the container or the transfer piping.

If, in any row of column E ("No") of Form 9.1, the entry number is greater than zero, the proposed LP-Gas facility is not in compliance with the requirements of NFPA 58-2017 for product control appurtenances or other safety measures. The design of the proposed facility must be modified to conform to the code requirements. In addition, the following items should be noted.

- If there are any "No" checks in Form 6.3, then the separation distance requirements for containers are not satisfied. An option that may be considered is the reduction in separation distance to 10 feet for underground and mounded containers by providing "Redundant and Fail-Safe Product Control Measures." In this case, complete Form 9.4 below to ensure that each requirement of "Redundant and Fail-Safe Product Control Measures" is provided.
- If there are any "No" checks in Form 6.4, then the separation distance requirements for transfer points are not satisfied. In this case, relocate the transfer points so that the separation distances conform to the code requirements or provide the Low Emission Transfer Equipment. Complete Form 9.5 below and ensure that all requirements for Low Emission Transfer Equipment are fulfilled.

Form 9.2

Analysis Summary on Exposure from and to the LP-Gas Facility

A	В	C	D	E
Item #	CHAPTER Title	Section & Title	Reference FORM #	Number of "Yes" checked
1	Exposure to and from Other	7.1 Exposure to off-site properties and persons from in-plant propane releases	7.1	0
	Properties	7.2 Exposure to propane facility from external events.	7.2	0

If the entry number in column E ("Yes"), Form 9.2 corresponding to Form 7.1 is greater than zero, consider one or more of the following design alternatives.

- 5 Consider moving the container or the transfer point to a different location, if possible and space exists, so that the property or the person is beyond the hazard distance.
- 6 Provide "Redundant and Fail-safe Product Control Measures". Complete Form 9.4 to ensure compliance.
- 7 Institute other technical measures such as installing gas and flame detectors (connected to facility shut down systems), sounding alarm outside facility premises, etc.
- 8 Institute administrative controls such as additional training for personnel, more frequent inspections of hoses and transfer piping, etc.

If the entry number in column E ("Yes"), Form 9.2 corresponding to Form 7.2 is greater than zero, consider one or more of the following design alternatives.

- 3 Implement procedures to monitor neighboring activity.
- 4 Install means in the adjacent plant to shut down the LP-Gas plant in case of an emergency in that plant.

Form 9.3
Analysis Summary on Fire Department Evaluations

A	В	C	D	E	F
Item #	CHAPTER Title	Section & Title	Reference FORM #	Number "zeros" entered in Column C, Lines 6 through 8 of Form 8.1	Number of "Yes" checked in Column C of Form 8.4
1	Fire department capability, adequacy	8.1 Data on the Fire Department	8.1	0	1
2	of water supply and Emergency Planning	8.2 Fire response water needs and availability	8.4		1250

If the entry number in row 1, Column E of Form 9.3 is greater than zero, consider one or more of the following design alternatives.

- 4 Discuss with the local Fire Department the needs of the LP-Gas facility and the evaluation results on the capability and training inadequacies of the Department.
- 5 Consider developing a cadre of personnel within the LP-Gas facility to respond to emergencies.
- 6 Institute container special protection system based on active protection approaches or passive approaches. Complete Form 9.6 and Form 9.7 below.

If the entry number in row 2, Column F of Form 9.3 is equal to zero, consider one or more of the following design alternatives.

- 1 Provide special protection (other than water spray or monitor systems) to containers, satisfying the requirements of section 6.27.5 of NFPA 58, 2017 edition. Complete Form 9.6 to ensure compliance.
- 2 Consider implementing the various options indicated in Table 9.1.

Form 9.4 Redundant and Fail-Safe Design for Containers

A	В		C	D	E	F
Item	Description		Features	Proposed for the facility?		NFPA 58 Section
#				Yes	No	Reference (2017 Edition)
1	Container sizes for the appurtenances provided		Appurtenances and redundant fail-safe equipment are provided for <u>each</u> container of water capacity 2,001 gal through 30,000 gal	X		6.28.3 and 6.28.4
•	Liquid or vapor w		Internal valve having internal excess flow valve	X		6.28.3.1 and 6.28.3.2
2	(1-1/4 in. or large	r)	Positive shutoff valve installed as close as possible to the internal valve	X		6.28.3.4
		1	Internal valve having internal excess flow valve or Backflow check valve	X		6.28.3.5
3	Liquid or vapor in	nlet	Positive Shutoff Valve installed as close as possible to the Internal Valve or the back flow check valve	X		6.28.3.5
	Railcar transfer	Flow into or out of railroad tank car	Emergency shutoff valve installed in the transfer hose or the swivel-type piping at the tank car end.	N/A	N/A	6.19.2.6 (1) and 6.28.4.1
4		Flow only into railroad tank car	Emergency shutoff valve or backflow check valve installed in the transfer hose or the swivel-type piping at the tank car end.	N/A	N/A	6.19.2.6 (2) and 6.28.4.1
5	Cargo tank transfe		Protection provided in accordance with 6.28.4.1	X		6.28.4.1
	Automatic closure	e of all	By thermal (Fire) actuation	X		6.28.4.2
6	primary valves (I' in an emergency	V & ESV)	Actuated by a hose pull-away due to vehicle motion	X		6.28.4.2
			Remote shutdown station within 15 ft of the point of transfer?	X		6.28.4.3 (A)
	Manually operated remote shutdown of IV and ESV		Another remote shutdown station between 25 ft and 100 ft of the transfer point?	X		6.28.4.3 (B)
7			Shutdown stations will shut down electrical power supply to the transfer equipment and all primary valves (Internal and Emergency Valves)	X		6.28.4.3
			Signs complying with the requirements of 6.28.4.3 (C) provided?	X		6.28.4.3 (C)

Note: If your facility does not have a rail terminal, write the word NA in both the "Yes" column and the "No" column in item 4 of the form in the railroad tank car row. Similar option is also available if there is no cargo tank vehicle transfer station.

Form 9.5
Evaluation of Low Emission Transfer Equipment

A	В		C		E	F
Item #	Description	Features		Proposed for the facility?		NFPA 58 Section Reference
				Yes	No	(2017 Edition)
1	Transfer into permanently mounted ASME containers on vehicles	Delivery nozzle and filler valve-max. liquid release after transfer of 4 cm <sup>3</sup> (0.24 in <sup>3</sup> ).	Fixed maximum liquid level gage not used during transfer operations	X		6.28.5.3 (A) & (B)
2	Transfer into stationary ASME containers	During product transfer or post transfer uncoupling	Does not exceed 4 cm³ (0.24 in³) from a hose of nominal size 1 in or smaller	N/A	N/A	6.28.5.4 (A)
2	delivery valve and nozzle combination	of the hose, liquid product volume released to the atmosphere	Does not exceed 15 cm³ (0.91 in³) from a hose of nominal size larger than 1 in.	Х		6.28.5.4 (B)
3	Transfer into stationary ASME containers		an 2,001 gal (w.c.) have tion device or another	N/A	N/A	6.28.5.4 (F)
	maximum filling limit	Do containers 2,001 g a float gage or other r	gal (w.c.) or greater have non-venting device?	Х		6.28.5.4 (E)
4	Transfer into stationary ASME containers fixed maximum liquid level gage	Not used during routi but may be used in ca	ne transfer operations	Х		6.28.5.4 (C) & (D)

If the facility does not have a particular feature described in items 2 or 3, write "NA" in both the "Yes" and "No" columns corresponding to its row.

Note:

Form 9.6 Special Protection Measures – Passive Systems

A	В	C		D	E
Item Special Protection		Question	Proposed for the facility?		NFPA 58 Section
#	Option	Question	Yes	No	Reference (2017 Edition)
		Insulation provided on each of the containers?		X	6.27.5.1
1	Container insulation	Insulation material complies with the requirements of NFPA 58?	N/A	N/A	6.27.5.1 and 6.27.5.2
2	Mounding of	Each container in the facility is mounded?	N/A	N/A	6.27.5.3
2	containers	Mounding complies with each requirement under section 6.6.6.3 of NFPA 58.	N/A	N/A	6.6.6.3 and 6.27.5.3
3	Burying of containers	Each container in the facility is buried?	N/A	N/A	6.27.5.4
3	Burying of containers	Buried containers comply with each requirement under section 6.6.6.1 of NFPA 58.	N/A	N/A	6.6.6.1 and 6.27.5.4

Form 9.7 Special Protection Measures – Active Systems

Item #	Special Protection	Question		Facility bliant?	NFPA 58 Section
	Option	Question	Yes	No	Reference (2017 Edition)
		Are fixed water spray systems, complying with NFPA 15 requirements, used for each container in the facility?		Х	6.27.6.1
1	Water spray systems	Do fire responsive devices actuate water spray system automatically?	N/A	N/A	6.27.6.2
		Can the water spray systems be actuated manually also?	N/A	N/A	6.27.6.2
	Monitor nozzle systems	Are the monitor nozzles located and arranged so that the water stream can wet the surfaces of all containers exposed to a fire?	N/A	N/A	6.27.6.3
2		Can the water stream from a monitor nozzle reach and wet the entire surface of, at least, one half of a length from one end of each of the containers it is designed to protect?	N/A	N/A	6.27.6.3
		Do fixed monitor nozzles comply with NFPA 15 requirements?	N/A	N/A	6.27.6.1
		Do fire responsive devices actuate the monitor nozzles?	N/A	N/A	6.27.6.2
		Can the monitor nozzles be actuated manually also?	N/A	N/A	6.27.6.2

#### Equivalent Protection to a Water Supply for Industrial and Bulk Facilities

In the case where water supply is not available in or near the LP-Gas facility, or is inadequate or it is prohibitively expensive to connect to a public or private water supply hydrant, alternative methods for providing protection should be considered. In lieu of providing a water supply, several alternatives are indicated in Table 9.1, which can offer an equivalency to a water supply system.

The intent of the controls identified in Table 9.1 is to maintain the entire system as a gas tight entity. These methods include reducing the service life of equipment, increasing the design pressure rating of the system beyond the requirements of NFPA 58, or providing early detection and isolation of the system to ensure product control. This list is not exhaustive and is not ranked in an order of priority.

Table 9.1
Suggested Alternative Methods for Industrial and Bulk Plants That Do Not Pose a
Hazard But Lack a Water Supply

Item #	Possible options to implement when adequate water supply is not available
1	Reduce the service life of hoses.
2	Increase frequency of equipment inspection.
3	Establish a service life program for the maintenance of the container pressure relief devices. This could include the installation of a listed multiple port valve and certifying that the relief devices are properly set and maintained every 5 to 10 years.
4	Increase the design strength of the piping and fitting systems.
5	Install emergency shutoff valves in conjunction with container internal valves.
6	Install emergency shutoff valves downstream of transfer pump outlets and upstream of the vapor and liquid valves at the bulkhead.
7	Install pneumatic tubing along the facility boundary to serve as a perimeter fire detection system. This would provide protection of the facility against exposure fires.
8	Provide optical flame detection or linear heat detection, or a gas detection system connected to an isolation valve installed downstream of every liquid and vapor nozzle on the container. This system could also be monitored to send a signal to an alarm company that notifies the fire department of an event.
9	Increase the separation distances of internal facility exposures to the container. These exposures would include a site dumpster, idle or waste pallets and combustibles, and increasing the parking distances between the bobtails and transports in relation to the container.
10	Relocate overhead power lines away from all container and cylinder storage areas to protect against ignition in the event of a line dropping due to wind or power pole impact.
11	Eliminate all combustible vegetation within 30 feet of the LP-Gas container. This can be accomplished using gravel, or paving the site yard.
12	Install tanks using the mounding or burial method.

## Initial Data on the LP-Gas Facility

# **APPLICATION**

## CONDITIONAL USE PERMIT

FINAL ACTION:

□ APPROVED

DENIED

DATE

I.C. PLANNING & DEVELOPMENT SERVICES DEPT. 801 Main Street, El Centro, CA 92243 (760) 482-4236

801 Main Street, El Centro, CA 92243 (760) 482-4236 - APPLICANT MUST COMPLETE ALL NUMBERED (black) SPACES - Please type or print -PROPERTY OWNER'S NAME **EMAIL ADDRESS** Jesus and Liliana Aquire 994, rres. propane ovahno.com MAILING ADDRESS (Street / P Box, City, State)

O GO 2922 Indio CA

APPLICANT'S NAME P CODE **EMAIL ADDRESS** esus and Library Aguirre (Aguirre's Propose LLC aginnes. Drodane a vahoo com MAILING ADDRESS (Street N 9 Box, City, State) ZIR CODE HONE NUMBER 760) 578-4 **ENGINEER'S NAME** CA. LICENSE NO. **EMAIL ADDRESS** Vang Chang 48449 Vang @ meeder.com MAILING ADDRESS (Street / P O Box, City, State) ZIP CODE PHONE NUMBER Manle Ave (800) 448-6817 ASSESSOR'S PARCEL NO SIZE OF PROPERTY (in acres or square foot) ZONING (existing) 014-031-005-000 M-PROPERTY (site) ADDRESS 1338 Glendale GENERAL LOCATION (i.e. city, town, cross street) Therma LEGAL DESCRIPTION Tract 570 FM 5 28 PLEASE PROVIDE CLEAR & CONCISE INFORMATION (ATTACH SEPARATE SHEET IF NEEDED) DESCRIBE PROPOSED USE OF PROPERTY (list and describe in detail) see attachment DESCRIBE CURRENT USE OF PROPERTY Vacant land **DESCRIBE PROPOSED SEWER SYSTEM** 12. N/A **DESCRIBE PROPOSED WATER SYSTEM** AW DESCRIBE PROPOSED FIRE PROTECTION SYSTEM IF YES, HOW MANY EMPLOYEES WILL BE AT, THIS SITE? IS PROPOSED USE A BUSINESS? Yes Yes ☐ No during transfer operation on I / WE THE LEGAL OWNER (S) OF THE ABOVE PROPERTY CERTIFY THAT THE INFORMATION SHOWN OR STATED HEREIN IS TRUE AND CORRECT. SITE PLAN B. FEE OTHER **OTHER** APPLICATION RECEIVED BY: REVIEW / APPROVAL BY DATE OTHER DEPT'S required. APPLICATION DEEMED COMPLETE BY: ☐ P.W. DATE ☐ E. H. S. APPLICATION REJECTED BY: DATE ☐ A. P. C. D. □ O. E. S. **TENTATIVE HEARING BY:** DATE 

# Jesus & Liliana Aguirre (Aguirre's Propane, LLC) Project Description

Location: 1338 Glendale Avenue, Salton City, CA 92274

APN: 014-031-005-000

Lot Size: 1.05 AC

Zone: M-1 (Light Industrial)

#### **Description:**

We, Jesus and Liliana Aguirre (Aguirre's Propane, LLC) propose the construction and operation of a (30) thirty thousand Liquefied Petroleum Gas (LPG) bulk plant on the addressed site listed above to store and distribute Liquid Propane Gas for commercial business purposes.

Our company is expecting to receive a bulk delivery of Liquid Propane Gas on an annual average once every two weeks. Liquid Propane Gas will be stored in a (30) thirty thousand gallon Propane Gas tank on the proposed site with guard posts around it. The LPG property will be fenced all around with chain link fence. We will receive bulk delivery of Liquefied Petroleum Gas (LPG) to refill company's bobtail trucks of 2300 and 2600 gallon capacity for dispensing fuel (LPG) to company customer's residences and business locations. The company will be using two bobtail trucks for business operations.

Aguirre's Propane, LLC will NOT be dispensing fuel (LPG) to the public at this location therefore there will be no public access at this location. The refilling operations of company's bobtail trucks will be twice a week on an average annual basis. The refilling procedures should take approximately two (2) hours from 7am to 9am on Monday, Wednesday, or Friday. There shall be two company personnel during the refilling of company's bobtail trucks.

We will be using Service Road and Glendale Avenue on their routes and travels to the LPG bulk plant. Aguirre's Propane, LLC plans on continuing providing service to our current service area throughout the Coachella Valley and grow our business operations in the Salton City and surrounding communities.

Jesus Aguirre & Liliana Aguirre

(Aguirre's Propane, LLC)

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OCT 10 2002

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PLANNING & DEVELOPMENT SERVICE

