2019 Aboveground #2 Fuel Oil Storage EPSS Reminder List

Applicable Codes and Standards

CBC 2019, CEC 2019, CMC 2019, CFC 2019 NFPA 30 2018, NFPA 37 2015, NFPA 55 2016, NFPA 99 2018, NFPA 110 2016, NFPA 704 2017

I. Scope

<u>CHK</u>

	1.	Emergency and standby power systems required by the California Building Code or the California Fire Code shall be installed in accordance with the California Building Code NFPA 70 and NFPA 110.	CBC, Sec. 2707.1.3
	2.	Prevention, control and mitigation of dangerous conditions related to storage, use, dispensing, mixing and handling of flammable and combustible liquids shall be in accordance with California Fire Code Chapter 50, Chapter 57 and Sec.603.3.	CFC Sec. 5701.1
	3.	Flammable and combustible liquids shall not be placed, stored or handled in any occupancy within the scope of California Code of Regulations, Title 19, Division 1 regulations, except as provided in the California Fire Code.	CCR, Title 19, Div. 1, Sec. 3.15
	4.	Fuel oil storage and piping serving fuel oil fired heating equipment shall comply with California Fire Code Section 603.3, NFPA 31 2016 and NFPA 30 2018.	CFC Sec. 603.3 , CMC Sec. 1301.1 & CPC Sec. 1201.1
<u>N/A</u>	II.	Generator Fuel Supply	
		Minimum fuel supply of 24 hrs. full-demand operation for acute care hospital. (Min 72 hrs. for NPC-5)	CEC 700-12(B)(2)Exc.1
	2.	Minimum fuel supply of 6 hrs. full-demand operation for SNF, Psych, ICF.	CEC 700-12(B)(2)Exc.2
	3.	Minimum fuel supply of 4 hrs. full-demand opertion for ambulatory surgery clinics.	CEC 700-12(B)(2)Exc.3
	4.	Minimum fuel supply of 96 hours in seismic design category C, D, E, or F as determined in accordance with ASCE 7. This is not a CBC requirement. However, it may be required for CDPH, CMS or JCI approval.	NFPA 110-2010, Sec. 5.1.2
		See OSHPD CAN 2-108 for temporary generator fuel supplies.	CBC, Sec. 108
		Liquid fuel shall feed to engines by pumps only. Fuel supply for exclusive use of EPSS or separate draw down.	NFPA 37, Sec. 6.9 NFPA 110, Sec. 5.5.1 & Sec. 5.5.1.1
	8.	Main fuel tank(s) shall be sized to accommodate 133% of the specific EPS class.	NFPA 110, Sec. 5.5.3
	9.	Low-fuel sensing switch required for the main fuel supply tank(s) when less than the minimum fuel required for the specific EPS class remains in the tank(s).	NFPA 110, Sec. 5.5.2
	10.	Calculate full-demand generator fuel consumption.	NFPA 110, Sec. 7.9.1
	11.	Tanks shall be sized so that the fuel is consumed within the storage life, or provisions shall be made to remediate fuel that is stale or contaminated or to replace stale or contaminated fuel with clean fuel.	NFPA 110, Sec. 7.9.1.3
	12.	Prior to being placed into service, tanks shall be tested in accordance with Section 21.5 of NFPA 30.	CFC Sec. 5704.2.12.1
	13.	Low fuel annunciation at generator panel.	NFPA 110, Sec. 5.6.5.1
	14.	Low fuel annunciation at a remote location on-site or off-site.	NFPA 110, Sec. 5.6.6.2(1)
	15.	Low fuel annunciation at a constantly monitored location.	NFPA 99, Secs.
	16.	Low fuel annunciation at regular work station of operating personnel.	6.7.1.2.15, 6.7.1.2.15.2 NFPA 99, Secs.
			6.7.1.2.15, 6.7.1.2.15.2

<u>СНК</u>	<u>N/A</u>		Aboveground Tanks Located Outside of Buildings Location approved by local authorities when applicable.	CAC, Sec. 7-125 (b)
		2.	Location of tanks with a capacity >660 gals. distance to property lines, public ways and important buildings shall be in accordance NFPA 30, Table 22.4.1.1(a).	CFC Sec. 5704.2.9.6.1.1
		3.	Tank, tank vent and tank filler locations in accordance with NFPA 55, Table 9.3.2.	NFPA 55, Sec. 9.3.2
		4.	Signage in accordance with NFPA 704 >100 gal. capacity.	CFC Sec. 5704.2.3.2
		5.	Fabrication & construction of tanks complies with NFPA 30, Chapters 21, 22 & 23.	CFC Sec. 5704.2.7
		6.	Horizontal cylindrical and rectangular tanks shall not exceed a gauge pressure of 1 psi and shall be limited to 2.5 psi under emergency venting conditions.	NFPA 30, Sec. 21.4.2.1.4
		7.	The design of the supporting stucture for tanks shall be in accordance with the California Building Code and NFPA 30.	CFC Sec. 5704.2.7.7
		8.	Where a tank is located in an area where it is subject to buoyancy because of a rise in the water table, flooding or accumulation of water from fire suppression operations, uplift protection shall be provided in accordance with Sections 22.14 and 23.14 of NFPA 30.	CFC Sec. 5704.2.7.8
		9.	Supports for above-ground tanks storing Class I, II or IIIA liquids elevated more than 12 inches above grade shall have a fire-resistance rating of not less than 2 hours in accordance with the fire exposure criteria specified in ASTM E 1529 or protected in accordance with UL2085 for protected tanks or protected by an approved water spray system designed in accordance with Chapter 9 and NFPA 15.	CFC Sec. 5704.2.9.2.3
		10.	Guard posts or other means shall be provided to protect exterior storage tanks from vehicular damage.	CFC Sec. 5704.4.5
	Г	11.	Spill control required when any individual vessel exceeds 55 gal. or the aggregate capacity exceeds 1,000 gals.	CFC Secs. 5703.4 & 5004.2.1
		12.	Secondary containment required when maximum allowable quantity exceeds provisions of CFC Table 5003.1.1(3).	CFC Sec. 5703.4
		13.	Listed generator subbase secondary containment fuel tanks of (660 gal) capacity and below shall be permitted to be installed outdoors or indoors without diking or remote impounding.	NFPA 110, Sec. 7.9.12
			Drainage control or diking required for aboveground tanks located outside. Drainage control or diking not required for listed secondary containment aboveground tanks located outside.	CFC Sec. 5704.2.10 CFC Sec. 5704.2.10, Exc. 2
		16.	Fuel tanks supplied by pumps shall have (1) overflow line piped to source tank, (2) high level alarm and (3) high-level automatic shutoff.	NFPA 37, Sec. 6.5.4
		17.	Filling, emptying and vapor recovery connections shall be located outside no less than 5' from building openings or lot lines of property that can be built on.	CFC Sec. 5704.2.7.5.2
		20.	The minimum horizontal separation between an LP-gas container >125 gals.and a Class I, II or IIIA liquid storage tank >660 gals. shall be 20 feet.	NFPA 30, Sec. 22.4.2.6
<u>CHK</u>	N/A		Tanks Located Inside Buildings in Compliance with CFC 603	.3.2
		1.	Signs prohibiting open flames and smoking.	CFC, Sec. 308.1.1 & 310.3
		2.	Signage in accordance with NFPA 704 >100 gal. capacity.	CFC Sec. 5003.5, NFPA 30, Sec. 21.7.2.1
		3.	In unsprinklered buildings, tanks shall comply with UL 80, UL 142 or UL 2085. The aggregate capacity of all tanks shall not exceed 660 gals.	CFC, Sec. 603.3.2.1, Item 1
		4.	In sprinklered buildings, the aggregate capacity of tanks that comply with UL 142 shall not exceed 1320 gals.	CFC, Sec. 603.3.2.1, Item 2
		5.	In sprinklered rooms, the aggregate capacity of protected tanks that comply with UL 2085 and CFC Sec. 5704.2.9.7 shall not exceed 3000 gals.	CFC, Sec. 603.3.2.1, Item 3

<u>СНК</u>	<u>N/A</u>	A IV. Tanks Located Inside Buildings in Compliance with CFC 603.3.2 Cont'd.			
		6.	≤ 3000 gals. of combustible liquids stored in accordance with Sec. 603.3.2.1 in	CFC Sec. 603.3.2.3 &	
		•.	compliant tanks shall not be counted towards the maximum allowable quantity.	Table 5003.1.1(1), Note	
			Such tanks are not required to be located in a control area.		
		-	Fuel storage >3000 gals. Shall be located in a Group H-3 occupancy.	CFC, Sec. 603.3.2.1	
			Group H-3 occupancy >1000 sq. ft. must have at least 25% of perimeter on an exterior wall.	CBC, Sec. 415.6	
		9.	Group H-3 occupancy separated from adjacent occupancies in accordance with CBC Table 508.4. See CBC Sec. 442 for a room containing a generator.	CBC, Sec. 508.4.4	
		10.	The design of the supporting structure for tanks shall be in accordance with NFPA 30.	NFPA 110 Sec. 7.9.1.1 & NFPA 37 Sec. 6.1	
		11	Fabrication & construction of tanks complies with NFPA 30, Chapters 21, 22 & 23.	NFPA 110 Sec. 7.9.1.1	
1				& NFPA 37 Sec. 6.1	
		12.	Tanks inside buildings required to have means to prevent overflow into the building.	NFPA 30, Sec. 24.14.8	
		13.	Room containing tank requires a minimum 1-hour separation. See CBC Table 508.4 and CBC Sec.442 for a room containing a generator.	CFC, Sec. 603.3.2.5	
		4.4	Tanks in basements located not more than two stories below grade plane.	CEC Sec. 602.2.2.7	
			Spill control required when any individual vessel exceeds 55 gal. or the aggregate	CFC, Sec. 603.3.2.7	
		15.	capacity exceeds 1,000 gals and secondary containment is not provided.	CFC, Sec. 603.3.2.6	
		16.	Horizontal cylindrical and rectangular tanks shall not exceed a gauge pressure of 1 psi and shall be limited to 2.5 psi under emergency venting conditions.	NFPA 30, Sec. 21.4.2.1.4	
		17.	Listed generator subbase secondary containment fuel tanks of (660 gal) capacity	NFPA 110, Sec. 7.9.12	
			and below shall be permitted to be installed outdoors or indoors without diking or remote impounding.	NITA 110, 000, 7.5.12	
		18.	Monitoring of secondary containment of tanks located indoors required.	CFC, Sec. 5004.2.2.5, NFPA 30, Sec.	
				22.11.4.9	
		10	Shall not be leasted near or be allowed to obstruct an agrees route		
		19.	Shall not be located near or be allowed to obstruct an egress route.	NFPA 30, Sec. 24.5.1	
		20	Chill control and accordant containment when tank located incide structure or an		
		20.	Spill control and secondary containment when tank located inside structure or on	NFPA 37, Sec. 6.3.2.4	
_	_	•	roof of structure.	& Sec. 6.3.4.2	
		21.	Fuel tanks supplied by pumps shall have (1) overflow line piped to source tank, (2)	NFPA 37, Sec. 6.5.4	
_	_		high level alarm and (3) high-level automatic shutoff.		
		22.	Filling, emptying and vapor recovery connections shall be located outside no less than 5' from building openings.	NFPA 30, Sec. 22.13.4.1	
0 1116		·/ ·	Tanka Lagated Incide Duildings in Compliance with CEC Ch. 5	-7	
<u>CHK</u>	N/A		Tanks Located Inside Buildings in Compliance with CFC Ch. 5		
			Signs prohibiting open flames and smoking.	CFC Sec. 5704.2.3.1	
			Signage in accordance with NFPA 704 >100 gal. capacity.	CFC Sec. 5704.2.3.2	
		3.	Liquid storage room/warehouse required when maximum allowable quantity exceeded.	CFC Sec. 5704.3.4.3	
		4.	Group H-3 occupancy >1000 sq. ft. must have at least 25% of perimeter on an exterior wall.	CBC Sec. 415.6	
		5.	Group H-3 occupancy separated from adjacent occupancies in accordance with CBC Table 508.4. See CBC Sec. 442 for a room containing a generator.	CBC Sec. 508.4.4	
		6.	The design of the supporting structure for tanks shall be in accordance with the Califonia Building Code and NFPA 30.	CFC Sec. 5704.2.7.7	
		7.	Tanks inside buildings required to have a means to prevent overflow into the building.	CFC Sec. 5704.2.9.5.1	
		8.	Fabrication & construction of tanks complies with NFPA 30, Chapters 21, 22 & 23.	CFC Sec. 5704.2.7	
		9.	Horizontal cylindrical and rectangular tanks shall not exceed a gauge pressure of 1 psi and shall be limited to 2.5 psi under emergency venting conditions.	NFPA 30, Sec. 21.4.2.1.4	
		10.	Spill control required when any individual vessel exceeds 55 gal. or the aggregate capacity exceeds 1,000 gals.	CFC Secs. 5703.4 & 5004.2.1	
		11.	Secondary containment required when maximum allowable quantity exceeds provisions of CFC Table 5003.1.1(1).	CFC Sec. 5703.4	

<u>CHK</u>	<u>N/A</u>	V. '	Tanks Located Inside Buildings in Compliance with CFC Ch. {	57 Cont'd
			Listed generator subbase secondary containment fuel tanks of (660 gal) capacity	NFPA 110, Sec. 7.9.12
			and below shall be permitted to be installed outdoors or indoors without diking or	,
			remote impounding.	
		13.	Monitoring of secondary containment of tanks located indoors required.	CFC Sec. 5004.2.2.5
			······································	
		14.	Shall not be located near or be allowed to obstruct an egress route.	CFC Sec. 5704.3.3.3
		15.	Sprinkler protection required when maximum allowable quantity is exceeded (120	CFC Sec. 5704.3.7.5.1
			gal for Class II)	
		16.	Protected by fire sprinklers if Group H-3.	CFC Sec. 5705.3.7.3
_	_			
		17.	Spill control and secondary containment when tank located inside structure or on	NFPA 37, Sec. 6.3.2.4
-	_	40	roof of structure.	& Sec. 6.3.4.2
		18.	Fuel tanks supplied by pumps shall have (1) overflow line piped to source tank, (2) high level alarm and (3) high-level automatic shutoff.	NFPA 37, Sec. 6.5.4
		10	Filling, emptying and vapor recovery connections shall be located outside no less	CFC Sec. 5704.2.7.5.2
1		15.	than 5' from building openings or lot lines of property that can be built on.	CFC Sec. 5704.2.7.5.2
CHK	N/A	VI	Additional Requirements for Protected Aboveground Tanks	
			Emergency vents on protected tanks are permitted to discharge in a building.	CFC Sec. 5704.2.7.4,
	A		Emolychey vents on protected tanks are permitted to discharge in a building.	Exc. 2
		2.	Structural supports tested as part of a protected tank in accordance with UL2085	CFC Sec. 5704.2.9.2.3,
			require no additional fire-resistance rating.	Exc. 1
		3.	Protected tanks location distances to property lines, public ways and important	CFC Sec.
		-	buildings in accordance with NFPA 30, Table 22.4.1.1(b) are permitted to be	5704.2.9.6.1.1, Exc. 3
			reduced by 1/2 but not less than 5 ft.	····, _····
		4.	Normal vents on protected tanks require flame arrestors or pressure vacuum	CFC Sec. 5704.2.7.3.2
			breather valves.	
		5.	Protected tanks require secondary containment, drainage control or diking in	CFC, Sec. 5704.2.9.7.3
			accordance with CFC, Sec. 5004.2	
		6.	A means shall be provided to establish the integrity of secondary containment in	CFC Sec. 5704.2.9.7.3,
			accordance with NFPA 30.	NFPA 30 Sec. 22.11.4.9
		7.	Vehicle impact protection is required, either incorporated into the system or by	CFC Sec. 5704.2.9.7.4
	_	-	guard posts, or both.	
		8.	Protected aboveground tanks shall be provided with overfill prevention.	CFC Sec. 5704.2.9.7.5
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		9.	Tank openings in protected tanks shall be on the top only.	CFC Sec. 5704.2.9.7.8
		10	Antisiphon devices required on all piping extending below the top level of the tank.	CFC Sec. 5704.2.9.7.9
		10.		01 0 060. 0704.2.0.1.0
<u>CHK</u>	N/A	VII	. Generator Fuel Supply/Return Piping	
			Provisions shall be made for pressure testing of piping.	CFC Sec. 5703.6.3
		2.		CFC Sec. 5703.6.5
		3.	•	CFC Sec. 5703.6.4
		4.		CFC Sec. 5703.6.8
			Approved metallic or nonmetallic flex connectors permitted to protect the piping.	NFPA 37, Sec. 6.8.2.1
			Valves shall be provided to control normal flow and shut off flow for breaks.	NFPA 37, Sec. 6.8.3
			Fuel piping shall be of compatible metal to minimize electrolysis and be properly	NFPA 110, Sec. 7.9.3
			sized.	
		8.	Galvanized fuel lines shall not be used.	NFPA 110, Sec. 7.9.3.1
				,
		9.	Approved flexible fuel lines shall be used between the prime mover and the fuel	NFPA 110, Sec. 7.9.3.2
			piping.	
		10.	Fuel line solenoids shall be battery powered.	NFPA 110, Sec. 7.9.9 &
				Sec. 5.6.3.2.1

<u>СНК</u>	<u>N/A</u>	VII.	Generator Fuel Supply/Return Piping Continued	
		11.	EPS piping shall be designed to minimize damage from earthquakes.	NFPA 110, Sec. 7.11.5
		12.	Gravity return fuel lines between the day tank and main supply tank shall flow freely to the main tank.	NFPA 110, Sec. 7.9.4.2
		13.	Gravity feed to generator not permitted.	NFPA 37, Sec. 6.5.1
		14.	Spill control, drainage control & secondary containment not required for exposed piping connected to systems. See ANSI/ASME B31.3	CFC Sec. 5703.6.2
<u>снк</u>	<u>N/A</u>	VIII	. Aboveground Tank Venting	
		1.	Vents for normal venting shall vent to exterior not less than 12 ft. above ground level and not less than 5' from openings or lot lines of property that can be built on.	CFC Sec. 5704.2.7.3.3
		2.	The vent pipe shall terminate outside the building at a point at least 24" from any buiding opening at the same or lower level.	NFPA 37 Sec. 6.7.1.1
		3.	Piping for venting shall discharge vertically or horizontally and shall not be trapped by eaves or other obstructions. away from adjacent walls.	CFC Sec. 5704.2.7.3.3
		4.	Piping for normal venting shall drain back to tank.	CFC Sec. 5704.2.7.3.4
		5.	Vent piping shall not be manifolded unless otherwise required.	CFC Sec. 5704.2.7.3.5
		6.	Normal vent piping not used for any other purpose.	CFC Sec. 5704.2.7.3.1
		7.	Vent piping protected from damage by guard posts or other approved means.	CFC Sec. 5703.6.4
		8.	Aboveground tanks require additional emergency venting.	CFC Sec. 5704.2.7.4
		9.	Emergency vents shall not discharge inside buildings.	CFC Sec. 5704.2.7.4
<u>СНК</u>	<u>N/A</u>	IX.	Temporary Installations at Construction Sites	
		1.	During construction, temporary aboveground storage tanks shall be in accordance with the provisions of CFC Sec. 5706.2.1 through 5706.2.8.1.	CFC, Sec. 5706.2

NOTE

Compliance with all items on this list does not necessarily assure compliance with all provisions of the applicable codes and standards. This reminder list should be used only by persons with a comprehensive knowledge of the applicable codes and standards.

OSHPD Policy Intent Notices and Code Application Notices. <u>https://oshpd.ca.gov/construction-finance/codes-and-regulations/#cans-pins-faqs</u> OSHPD Project Review Status <u>https://esp.oshpd.ca.gov/CitizenAccess/</u> OSHPD Public Use Forms https://oshpd.ca.gov/construction-finance/resources/forms-applications-reminder-lists/#ProjectForms