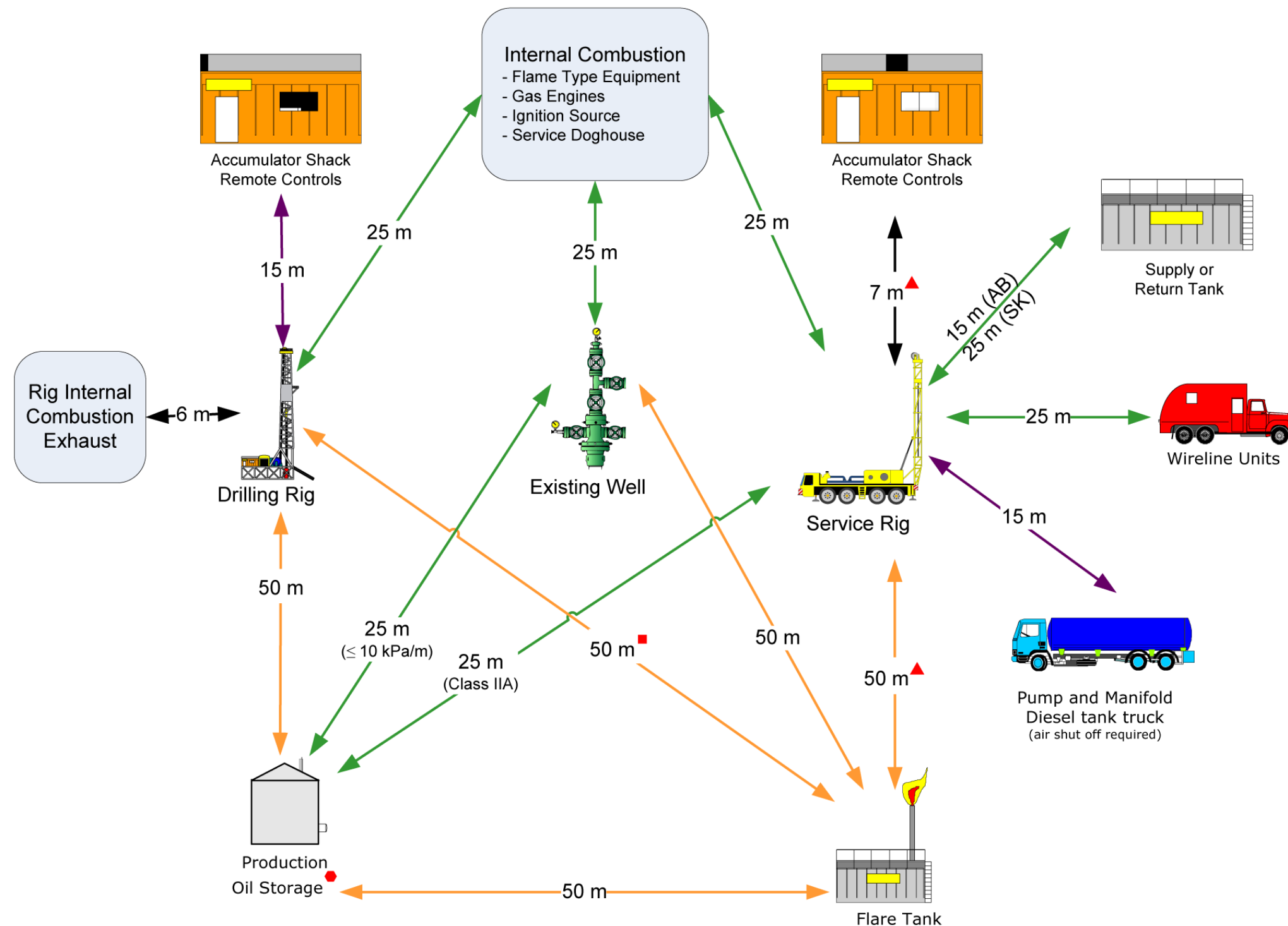


APPENDIX A: MINIMUM SPACING REQUIREMENTS FOR MULTI-OPERATIONAL PADS



■ **Note.** 50 m as per ERCB D036 or ERCB D037; however, if ERCB D008, Section 4 (for drilling) or ID 91-03, Section 1.2 (for servicing) requirements are met, an Operator may opt to drill or service with a Class I BOP and reduce spacing between the well and the flare tank to 25 m.

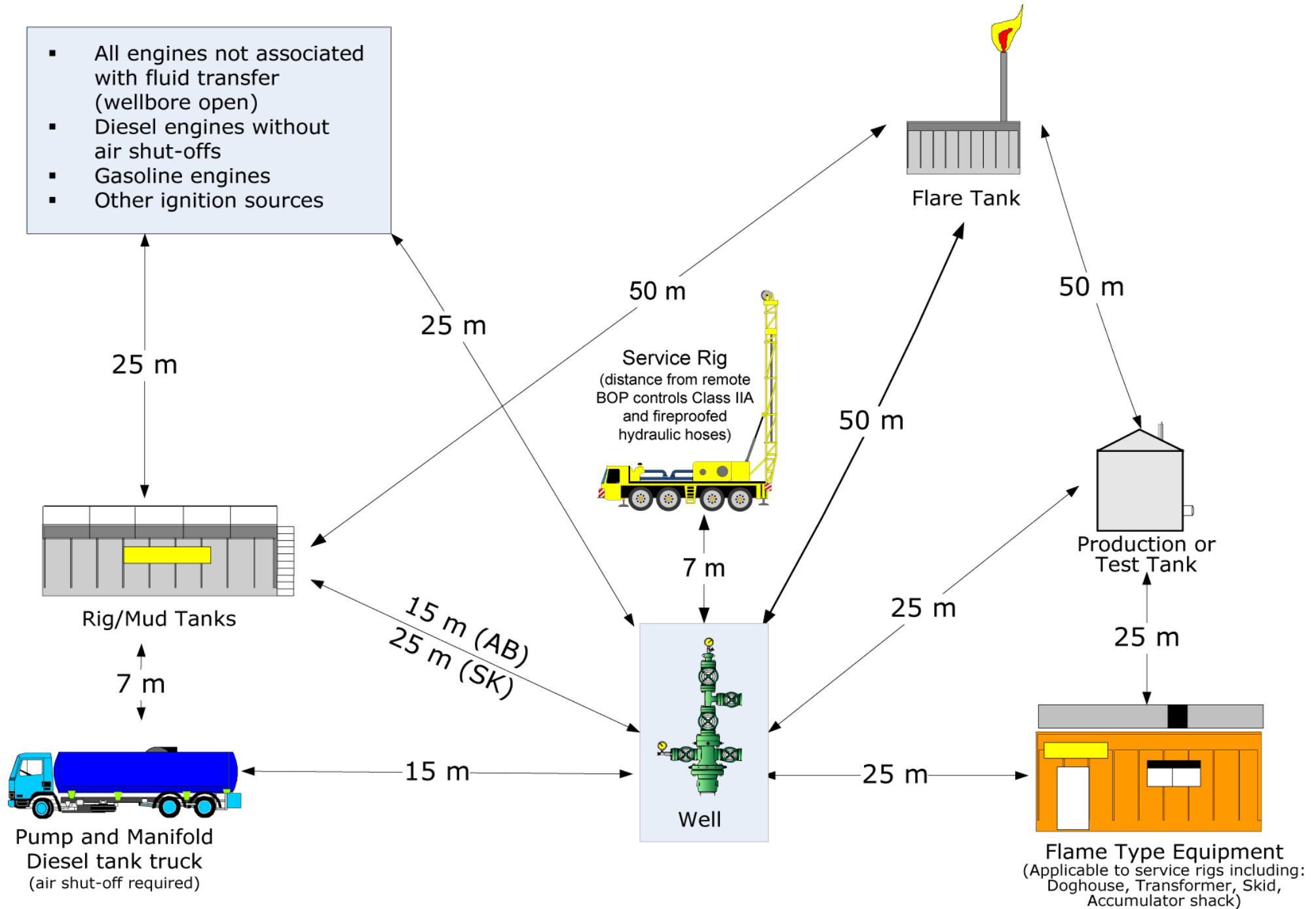
▲ **Note.** In instances with a Class III BOP or a critical sour well, spacing must be 25 m in accordance with ERCB D037.

● **Note.** In Saskatchewan, multi-well pads that require a facility licence or are a licensed facility must have 50 m spacing between the the production oil storage and the well in accordance with the *Oil and Gas Conservation Regulations, 2012* and *S-01 Saskatchewan Upstream Industry Storage Standards*.

Disclaimer: This diagram was compiled from several regulatory sources at the time of publication (November 2012). Its accuracy is dependent upon regulatory change. It is the reader's responsibility to ensure all operations adhere to relevant regulations. This diagram only depicts minimum spacing required between items. It does not represent required equipment orientation.

APPENDIX I:

WELL SERVICING EQUIPMENT MINIMUM SPACING: CLASS IIA



Class IIA Primary:

a well with a sandface reservoir pressure equal to or less than the hydrostatic pressure that would be exerted at the sandface if the well were filled with formation fluids.

- **Kill line not required.**
- **10-minute BOP pressure test on first hole, change of operator or jurisdiction and every 30 days.**

Class IIA Secondary:

a well with a sandface reservoir pressure greater than the hydrostatic pressure that would be exerted at the sandface if the well were filled with formation fluids. It occurs by virtue of injection into the formation of fluid(s) other than water at ambient temperatures. This includes all wells that are part of an active EOR project and approved by the ERCB and any offset wells within 1000 m of an EOR well.

- **15 m kill line required.**
- **10-minute BOP pressure test prior to servicing first well, change of operator or jurisdiction and every 7 days.**
- **If the BOPs are moved to a new well within 7 calendar days of the original 10-minute test, BOP component pressure testing must be a minimum of 2 minutes.**

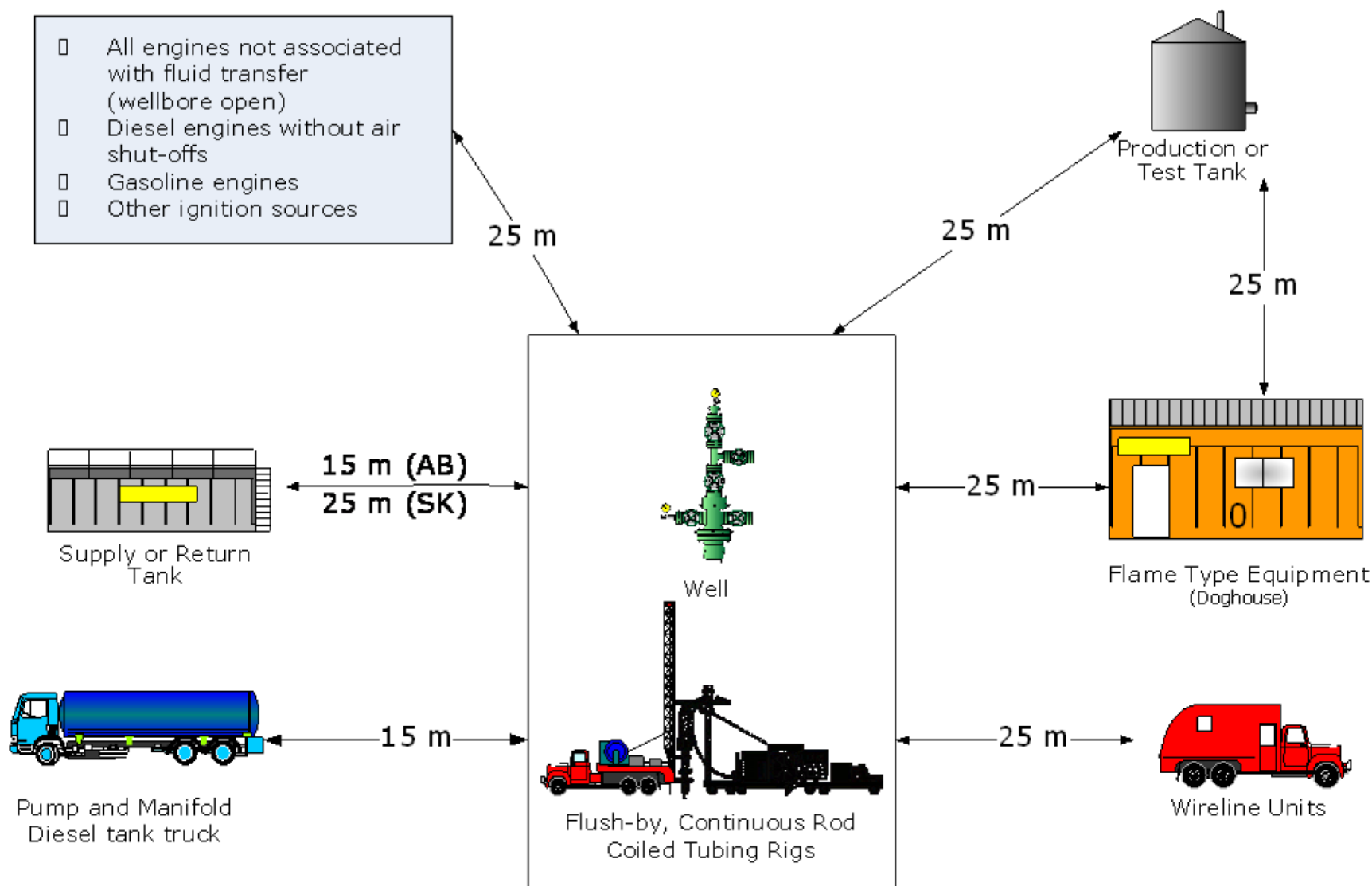
Notes:

- All distances noted are minimum distances between equipment.
- All measurements are from the nearest point of any equipment.
- Fluids pumped that are lighter than 920 kg/m^3 must be pumped at a distance of 50 m from the wellhead.
- Spacing exemptions may be granted by the Regulator.
- Representation is NOT to scale.
- Adapted from Directive 037: Service Rig Inspection Manual, ID 91-03: Heavy Oil/Oil Sands Operations, Oil and Gas Conservation Regulations, 2012 and S-01 Saskatchewan Upstream Industry Storage Standards.

Disclaimer: This diagram was compiled from several regulatory sources at the time of publication (November 2012). Its accuracy is dependent upon regulatory change. It is the reader's responsibility to ensure all operations adhere to relevant and current regulations.

APPENDIX J:

ASSOCIATED WELL SERVICING EQUIPMENT MINIMUM SPACING: CLASS IIA



Class IIA Primary:

a well with a sandface reservoir pressure equal to or less than the hydrostatic pressure that would be exerted at the sandface if the well were filled with formation fluids.

- BOP pressure test as per IRP 21.

Class IIA Secondary:

a well with a sandface reservoir pressure greater than the hydrostatic pressure that would be exerted at the sandface if the well were filled with formation fluids. It occurs by virtue of injection into the formation of fluid(s) other than water at ambient temperatures. This includes all wells that are part of an active EOR project and approved by the ERCB and any offset wells within 1000 m of an EOR well.

- BOP pressure test as per IRP 21.

Notes:

- All distances noted are minimum distances between equipment
- All measurements are from the nearest point of any equipment
- Fluids pumped that are lighter than 920 kg/m^3 must be pumped at a distance of 50 m from the wellhead.
- Spacing exemptions may be granted by the Regulator.
- Representation is NOT to scale.
- Adapted from Directive 037: Service Rig Inspection Manual, ID 91-03: Heavy Oil/Oil Sands Operations, Oil and Gas Conservation Regulations, 2012 and S-01 Saskatchewan Upstream Industry Storage Standards.

Disclaimer: This diagram was compiled from several regulatory sources at the time of publication (November 2012). Its accuracy is dependent upon regulatory change. It is the reader's responsibility to ensure all operations adhere to relevant and current regulations.

APPENDIX K:

WELL SERVICING SPACING MATRIX

Equipment	Distance shown in metres (m)					
	Wellhead	Production Tanks (contains HC)	Rig Tank	Tank Truck (c/w PASO)	Power Line / Pole	Service Rig / Continuous Rod Rig
Service Rig / Continuous Rod Rig		25			H	A
Pipe Handler	6 ^B		15			
Wellhead		25	15 ^E	15		
Power Tongs / Swivel (c/w PASO)	7					
Power Line / Pole		7				H
Pressure Truck (c/w PASO)	15 ^D		15			
Production Tanks (contains HC)	25		15 ^E	7	7	25
Tank Truck (c/w PASO)	15	7	7			
Rig Pump	15		7			
Rig Tank	15 ^E	15 ^E		7		
Wireline Unit (c/w PASO)	25 ^G	15				
Wireline Unit c/w mast, PASO		15				A
Steamer/Hot Oiler	25	25				
Nitrogen Unit (flameless)	15	15	15			
Nitrogen Unit (flame vaporizer)	25	25	25			
Diesel Engines with PASO	7	7	7			
Diesel Engines without PASO	25	25	25			
Trailers / Doghouse	25	25	25			
Boiler	25 ^E	25	25			
High Pressure Pumper (e.g.cementer)	15	15				
Gasoline Engines	25	25	25			
Portable light plants/generators	25 ^E	25				
Flushby Unit (c/w PASO)		15				A
Bailing Tanks	<1 ^C					
Coil Tubing Unit		15				
Continuous Rod Welder	25	25				
Vacuum Truck (c/w PASO)	7 ^F					

Notes:

PASO = positive air shut off
 measurement is from well center line to air intake
 Other Ignition Sources (MCC's, process buildings, etc.)

- A = closest guyline + mast height + 3 m
- B = exhaust to closest well (not the well being worked on)
- C = may be adjacent to the well but must be removed as soon as bailing operations are completed.
- D = Primary may be 7 m with ERCB exemption
- E = in Sask 25 m
- F = closest point from anywhere on truck to any part of well (s)
- G = May be 15 m with ERCB exemption
- H = Mast height + 3 m. Anchor lines do not pass over or under a live power line

[Adapted from ID 91-03: Heavy Oil/Oil Sands Operations.](#)