1.0 PURPOSE

This purpose of this document is to provide

- Requirements for the proper selection and use of utility hoses,
- Guidelines for safely making utility connections to process lines and vessels, and
- Practices to ensure that neither the utility nor the processes are adversely compromised.

2.0 SCOPE

This guideline applies to both Marathon Petroleum Company (MPC) and Contractor personnel and covers hose selection, limitations, hazards, and precautions associated with usage of utility hoses. This guideline applies to the following types of hoses: fresh water, compressed air, steam, hydrocarbon, and nitrogen. This guideline also covers requirements for temporary utility hose connections to process lines and vessels.

This guideline does not include hoses intended on being used as an integral part of process equipment. This guideline does not include the selection and use of vacuum truck hoses, please reference RSW-SAF-058-DT. For permanent utility hose or hard-piped connections, please refer to corporate standard RSP-1150-010. If you have questions concerning the proper use or handling of utility hoses, contact your supervisor.

3.0 RESPONSIBILITIES

Owning Department

Following are the responsibilities for the Owning Department:

- Perform a visual inspection of each hose before use. Hoses that are found to be defective or due for testing are to be immediately taken out of service. Defective hose shall immediately be disposed of properly to prevent re-use. Hose due for testing shall be taken to the appropriate testing location.
- The Owning Department will be responsible for the use of check valves when connecting utility hoses to process lines per Appendix A.
- The Owning Department will ensure contractors using utility hoses comply with this guideline and promptly stop and report any misuse of utility hoses to the safety department.
- The Owning Department will follow the requirements of RSP 1150-010 to determine if a utility hose can be safely connected to a process line or vessel.

4.0 GENERAL UTILITY HOSE USE AND SELECTION GUIDELINES

4.1 General Requirements

- Visually inspect hoses and fittings prior to use. A sample checklist is included in MRD Maintenance Procedure RDP-M052-MI-DT Inspection and Testing of Process Hoses. Hoses that are found to be defective or due for testing are to be immediately taken out of service. Defective hose shall immediately be disposed of properly to prevent re-use.
- Connect and disconnect utility hoses while wearing the correct personal protective equipment (PPE). When selecting PPE, consider the temperature of the material inside the hose, its pressure, and any chemical hazard it may present (acid, caustic, flammable, etc.).
- Hose installed across a roadway must be protected from damage or the roadway barricaded to prevent damage to the hose. Vehicles should not be driven over unprotected hoses.
- Hose is to be used in its intended service only.
- A hose shall not be constructed or altered to allow a crossover between air and nitrogen (except as allowed for inert entry). Example: Changing a hose connection on a nitrogen hose to allow use of an air driven pneumatic tool.
- Always make sure that the installed hose can be safely vented after being used.
- Check valves are required when connecting a utility hose to a process.
- When connecting a utility source to a process, always pressurize the hose from the utility source first.
- Utility hoses shall not be connected to steam lines greater than 150 psig unless a KMS MOC is completed.

4.2 Red Hoses

Use the red hoses with Chicago fittings to move fresh water and compressed air. Use a bleeder if both ends of the hose will be connected to piping or equipment. Bleeders are not required if one end of the hose is left open in use, such as when washing down a unit. MRD uses ¾", 50' long, and 300 # hoses. Design operation pressure is 150 psi.

To connect the hoses (without locking mechanism type fittings):

1. Push the ends together.
2. Turn the ends until locked/securely connected.
3. Loop a wire or insert a pin through the two ends in the holes provided.

Some air hoses are equipped with quick connecting type locking mechanisms on the fitting. The universal fittings are compatible with Chicago fittings. To connect, follow the same steps as with hoses without locking mechanisms. The third step can be eliminated as the locking mechanism eliminates the need for a pin/wire. However, the universal fitting is equipped with the same holes designed for pins/wire. On most of these types of hoses, usually one end is equipped with a locking device, with the other end equipped with a "naked" universal fitting. It is encouraged that pins/wire be used in addition to the locking mechanism type fitting.

To disconnect the hoses:

1. Check both ends of the hoses to make sure they are not in use.
2. Bleed off the pressure. Point the bleeder away from yourself and other people while you are relieving the pressure. Be prepared for liquids to spray out.
3. Remove the wire or pin that joins the connections, pull the locking mechanism back, or both.
4. Turn the ends. Be prepared for liquid to run out. If the hoses have been connected to process equipment, read the SDS for the material inside the equipment and wear gloves and any other additional PPE based on the SDS.
5. Pull the ends apart.

4.3 Black Hoses

Use the black hoses to carry steam. They have a heavy wire mesh inside them so they are stiff. They require a fitting to join together. Use a bleeder if the hose will be connected to piping or equipment, such as when steaming out a section of piping. Bleeders are not required if a vent or bleeder is open on the piping or equipment or if one end of the hose is left open in use, such as when letting steam blow onto a piece of cold equipment. MRD uses 1 inch, 50' long, 25 # hoses. Design operation pressure is 150 psig.

To connect the hoses:

1. Insert the fitting into the hose end. Turn the end by hand until tight and then tap the ears with a wrench to ensure a tight fit.

To disconnect the hoses:

1. Bleed off the pressure.
2. Tap the fittings with a wrench and unscrew them. Once the hoses are nearly apart, tap the hose fitting again and loosen to allow remaining steam to escape. Hot condensate may form inside the hose and run out once the hoses separate. Keep the hose ends away from your face and body when you break the fittings apart and lower the end of the hose.

4.4 Yellow Cover & Blue Stripe Hoses

Use the yellow hoses to move hydrocarbons. The yellow hoses are stiff and come in various lengths. They are rated to 150 psi.

To connect the hoses:

1. Screw together opposite ends of hoses.

To disconnect the hoses:

1. Block the source.
2. Clear the line as well as possible.
3. Make sure to bleed pressure.
4. Unscrew the two hoses. Be prepared for liquid to run out. If the hoses have been connected to process equipment, read the SDS for the material inside the equipment and wear gloves and additional PPE based on the SDS.
5. Pull the ends apart.

Production of yellow & blue hose has been discontinued by manufacturer as of 4/27/2018. These hoses may continue to be utilized given

1. the hose passes pre-use inspection by user
2. the hose has not exceeded they one year allowable life for hydrocarbon hose.

4.5 Blue Cover & Yellow Stripe (Blue Thunder – 1 ½" hose) and (NRP Jones 1324 – ¾" hose)

Use the blue cover and white striped hose to move hydrocarbons.

The 1 ½" (Blue Thunder) hoses are less stiff and lighter than previous hydrocarbon hoses. They are rated to **200 psi** and **-40** to **250**-degree Fahrenheit.

The ¾" hoses (NRP Jones 1324) are rated to 350 psi and -20 to 300-degree Fahrenheit.

Both hose (3/4" and 1 ½") have NPT male to male connections and will require coupling or unions to connect.

To connect the hoses:

1. Utilize coupling or union

To disconnect the hoses:

1. Block the source.
2. Clear the line as well as possible.
3. Make sure to bleed pressure.
4. Disconnect the two hoses. Be prepared for liquid to run out. If the hoses have been connected to process equipment, read the SDS for the material inside the equipment and wear gloves and additional PPE based on the SDS.
5. Pull the ends apart.

4.6 Blue Cover & White Stripe (Super Dragon)

Use the blue and white hose to move hydrocarbons. These hoses are stiff and come in various lengths. They are rated to 500 psi and -40 to 250 degrees Fahrenheit. These hoses can be ordered with threaded or flanged connections.

To connect the hoses:

1. Screw together (NPT) opposite ends of hoses or
2. Bolt up flanges

To disconnect the hoses:

1. Block the source.
2. Clear the line as well as possible.
3. Make sure to bleed pressure.
4. Disconnect the two hoses. Be prepared for liquid to run out. If the hoses have been connected to process equipment, read the SDS for the material inside the equipment and wear gloves and additional PPE based on the SDS.
5. Pull the ends apart.

Blue "Super Dragon" hoses will be used for unit decontamination during maintenance outages. When not in use they shall be rolled up and stored by Maintenance.

Inspection and service life of the hose shall meet requirements in Inspection & Testing of Process Hoses - RDP-M052-MI-DT.

4.7 Green Hoses

Use green hoses to move Nitrogen. Use a bleeder if both ends of the hose will be connected to piping or equipment, such as when purging a vessel with Nitrogen. MRD uses ¾", 50' long hoses. Design operation pressure is 300 psig with -40 F to + 200 F continuous service. The part number is 66232688.

Note: The use of copper tubing and compression fittings is prohibited for Nitrogen service. This guideline is to distinguish the method for transporting Nitrogen via temporary arrangement to this specific method.

To connect hoses:

1. Push the ends together.
2. Turn the ends until locked/securely connected.

Nitrogen hoses are equipped with a locking type mechanism on the connection fittings. The fittings are not compatible with Chicago or universal fittings and are unique to Nitrogen usage.

To disconnect the hoses:

1. Check both ends of the hoses to make sure they are not in use.
2. Bleed off the pressure. Point the bleeder away from yourself and other people while you are relieving the pressure. Be prepared for residue to spray out.
3. Pull the locking mechanism back.
4. Turn the ends. Be prepared for residue to run out. If the hoses have been connected to process equipment, read the SDS for the material inside the equipment and wear gloves and any other additional PPE based on the SDS.
5. Pull the ends apart.

Note: When the use of Nitrogen is complete, promptly remove fittings from headers, bleeders, and any other connection point. At this point, put the fittings away in storage and install a plug in place of the Nitrogen fitting.

4.8 Stainless Steel Braided Hoses

Stainless Steel Braided hose will be used for decontamination during maintenance outages. When not in use they shall be stored by Maintenance.

EXCEPTION: Stainless Steel Braided hose for scavenger carts.

A pressure and temperature evaluation shall be performed for each stainless steel braided hose application to ensure the design of the metal hose assembly will meet the particular decontamination application. The following design parameters must be determined as part of the evaluation:

1. Hose diameter
2. End connections
3. Material specification
4. Maximum allowable working pressure (MAWP)
5. De-rating of MAWP due to operating temperature
6. Configuration
7. Minimum bend radius

Stainless steel hoses shall include, at a minimum, a stainless corrugated metal tube and a least one stainless steel braided cover. Hoses equipped with flanged end connections should have one fixed flange and one rotating flange (to minimize torque stress on the hose when making connections).

Stainless steel hoses must be pressure tested and documentation of the test must accompany the hose. The hose must be tagged to indicate the serial number, working pressure, maximum temperature, and required test pressure.

1. Visual Inspection – Hoses shall be inspected prior to each use. The hose should bear inspection identification of a current inspection per MRD Maintenance Procedure RDP-M052-MI-DT Inspection and Testing of Process Hoses
   Note: Rented hoses are not required to follow RDP-M052-MI-DT
2. Care should be taken to inspect the braiding where visible, since the pressure-containing ability of the hose is greatly affected by the braiding.

5.0 TEMPORARY UTILITY HOSE CONNECTIONS TO PROCESS

5.1 General Requirements

This guideline covers temporary hose connections between a utility line and a process line referred to as Type D Connections (Appendix A).

- Utility system refers to the following pressurized systems:
  - Steam,
  - Plant air,
  - Instrument air,
  - Process air,
  - Nitrogen,
  - Utility water,
  - Potable water
  - Condensate, and
  - Boiler feed water.
- The hose used shall be compatible with both the process and utility line class specification.
- Hoses shall be visually inspected before use.
- All piping between the two main line valves shall be disconnected and either plugged or blind flanged (depending on connection) and piping removed after utility connection is no longer being used.

CAUTION: For drainage/depressuring the drop out spool, take appropriate safeguards as if the spool contains process gas or liquids before opening drain valve.

CAUTION: Verification of energy isolation must occur with any utility hose to process connection in accordance with the Refinery Energy Isolation Procedure (RSW-SAF-002-DT).

CAUTION: A check valve is always required between the utility and process side of the connection per Appendix A.

5.2 Hazards and Management of Change Guidelines

5.2.1 **Hazard Analysis**
Refer to RSP-1150-010 for hazard analysis requirement for utility connections made to a process line or vessel.

6.0 DEFINITIONS

Process – Any chemical or hydrocarbon bearing line or equipment including flare and oily water sewers

Temporary Connection – Any utility to process connection which is used less than once per week.

Type D Connection – A hose connection

7.0 REFERENCES

Inspection & Testing of Process Hoses - RDP-M052-MI-DT

Safe Use of Nitrogen RSW-SAF-056-DT

Energy Isolation RSW-SAF-002-DT

Utility Connections to Process Lines and Vessels RSP-1150-010

8.0 ATTACHMENTS

Appendix A – Type D Utility Hose Connection to Process

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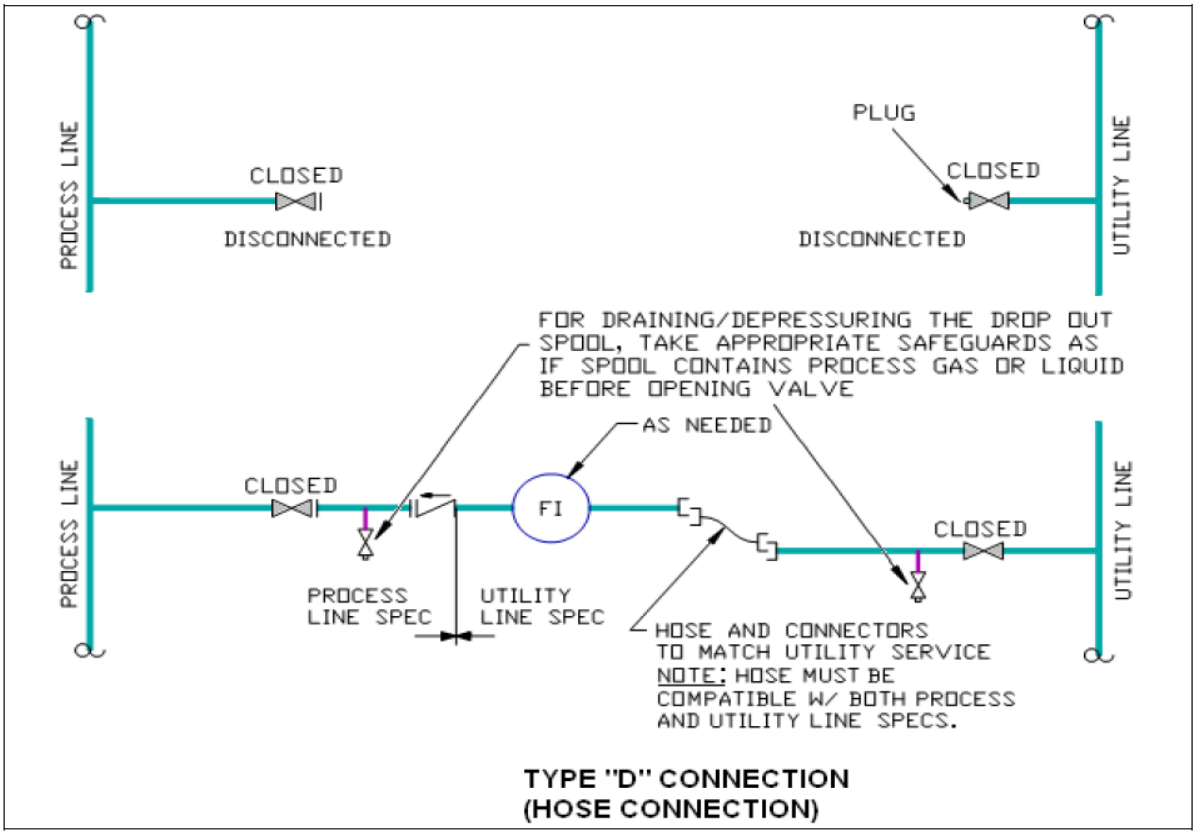
9.0 REVISION HISTORY

Revision number	Description of change	Written by	Checked by	Effective date
12	Five-year review with no changes made.	M. Godfrey	J. Rabideau	8/26/16
13	Added language for Super Dragon Blue hoses and SS Braided Hoses	B. Dibert	J. Rabideau	03/01/17
14	Removed language associated with SS hoses. Hoses will now be used with modified scavenger carts per M20171368-001.	W. Merrifield	J. Rabideau	11/03/17
15	Added new hydrocarbon hose (Blue Thunder) in Section 4.5. Add additional language allowing the use of the discontinued hydrocarbon hose (Section 4.4) if it passes pre-use inspection and has not surpassed it allowable life of one year. M20183335-001	W. Merrifield	J. Rabideau	4/30/2018
16	Added ¾" hydrocarbon hose (NRP Jones) in Section 4.5. M20184913-001	W. Merrifield	J. Rabideau	9/11/18

Appendix A
Type D Utility Hose Connection to Process



TYPE "D" CONNECTION
(HOSE CONNECTION)