

SCOPE

- I 1.1 This practice covers the design and construction of steam inlet piping for condensing and non-condensing turbines, and exhaust piping for non-condensing turbines.
- I 1.2 **An asterisk (*)** indicates that additional information is required. If a job is contracted, this additional information is furnished in the Job Specification.

SUMMARY OF ADDITIONAL REQUIREMENTS

- I 2.1 **ANSI Standard Z535.1, Safe Color Codes**, shall be used with this practice.

DESIGN

- R ♦ 3.1 **Blowdown valves** shall be provided for low point drains in the turbine supply and exhaust steam lines, and in the turbine casing. Turbine casing drain shall be trapped for turbines requiring automatic unattended startup.
- O ♦ 3.2 Two block valves shall be installed in the supply line. One shall be located at the steam main, the other at the turbine.
- R 3.3 **Inlet and exhaust steam valves.** Installations shall permit the complete drainage of accumulated condensate before valve opening. When installed in horizontal pipe runs, pipelines drains may be installed or the valve may be furnished with a body drain on the inlet side of the gate (or plug). Valves shall be positioned with stems extending vertically upward or horizontal, or any intermediate position, providing the stem is **above** the horizontal center line. Also see **Par. 3.10.d**.
- O * 3.4 **A control valve** shall be provided for turbines with remote starting facility. The control valve shall be located near the turbine. A bypass valve shall be installed for warming the turbine.
- S ♦ 3.5 For general purpose steam turbines with governors not equipped with a manually activated override for testing the overspeed trip system, a bypass with a globe valve shall be installed around the steam inlet gate or control valve to permit checking the overspeed trip in a controlled manner. Bypass is not required if turbine inlet connection is 1½ in. (38 mm) or less.

STEAM SUPPLY PIPING

- R ♦ 3.6 **The steam supply line** shall be connected at the top of the steam main, and shall be provided with a steam trap at the low point near the turbine.
- R,S 3.7 **A Y-type strainer** with a valved blowdown to a location where it will not discharge on personnel shall be located near the turbine.
- R 3.8 **A warm-up line**, venting to atmosphere with a silencer shall be provided in the inlet steam line adjacent to the trip/throttle valve on Special Purpose Turbines.

EXHAUST PIPING

- S 3.9 **An exhaust head** shall be provided for turbines exhausting to atmosphere to protect operating personnel from hot water.

IP 3-3-7		Inlet and Exhaust Piping For Steam Turbines	EXXON INTERNATIONAL PRACTICE
Page 2 of 2			
Rev. 0	June 1997		

- S 3.10 **Non-condensing turbines which exhaust into an exhaust steam main** need not be equipped with an exhaust pressure relief valve, provided the following requirements are fulfilled:
- Maximum inlet steam pressure does not exceed 150 psig (1050 kPa).
 - Caution sign.** For installations in the U.S.A., a porcelain enameled sign per **ANSI Z535.1**, as shown below, shall be placed at the exhaust steam valve. The sign shall be approximately 7 in. x 10 in. (175 x 250 mm) with black letters on a yellow background. For other countries, a sign of similar composition and dimensions, with a similar message in the language of the country shall be provided.

CAUTION DO NOT CLOSE THIS VALVE UNLESS INLET BLOCK VALVE IS CLOSED AND TURBINE CASE BLEEDERS ARE OPEN

- Exhaust block valve shall be car sealed open (CSO).
 - Gate valves used as exhaust steam block valves shall be installed with stems in the horizontal position. This is an exception to **Par. 3.3**.
- R 3.11 **A steam trap** shall be provided at the low points of the exhaust line of any back pressure turbine.
- R 3.12 **Exhaust lines for non-condensing turbines** which exhaust to a steam main shall be **routed individually** to the main and shall be **connected at the top** of the main.

FIELD CLEANING

- R 4.1 **General Purpose Turbines.** The portion of the steam supply line downstream of the Y-type strainer shall be free of mill scale, weld spatter, weld icicles, and debris which could obstruct or damage the controls or the rotating element of the turbine.
- R 4.2 **Special Purpose Turbines.** The steam inlet line shall be cleaned of mill scale, weld spatter, weld icicles, and debris up to the nearest main header or drum.

Revision Memo

9/68	Original Issue of Basic Practice
6/72	Revision 1
6/76	Revision 2
1/79	Revision 3
1/83	Revision 4
12/91	Revision 5
6/97	Revision 0 - Original Issue of International Practice Par. 3.1 - Two block valves required. Par. 3.5 - Overspeed check bypass piping added. Par. 3.10d - CSO exhaust block valve added. Position of stems for exhaust block valves added.

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