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Guidance on Industry Standard for Instrument and Utility Air Package

GIS 60-302

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GIS 60-302. This Guidance on Industry Standard (GIS) was developed from parts from heritage documents from the BP merged companies as follows:

Amoco Corp

A FE-DRY-AIR-E Fabricated Equipment Dryer Systems Air Engineering Specification

ARCO

Standard 315 Instrument Air Dryers

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1. Scope

This GIS provides guidance for selection, design, and construction of instrument and utility air systems and associated equipment for onshore and offshore plants and facilities.

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

American National Standards Institute (ANSI)

ANSI B 16.1	Flanges
ANSI B1.20.1	Pipe Threads

American Petroleum Institute (API)

RP 550	Installations of Instruments and Controls
RP 520	Sizing & Installing Pressure Relieving Devices
RP 14E	Design and Installation of Offshore Production Platform Piping Systems
RP 14F	Design and Installation of Electrical Systems for Fixed and Floating Offshore Facilities for Un-Classified and Class I, Division 1 and Division 2 Locations

American Society of Mechanical Engineers (ASME)

Sec. VIII, Sect IX.	Boiler and Pressure Vessel Code
B 16.1	Pipe Flanges
B 16.20	Gaskets

American Society for Testing and Materials (ASTM)

A 193 B7	Bolting Materials
A 194	Bolting Materials
A 420	Carbon Steel Piping
A 234	Steel Pipe Fittings
A 960	Steel Pipe Fittings
A 961	Steel Pipe Fittings

American Welding Society (AWS)

Welding Standards

BP Group

GP 6-60	Onshore and Offshore Paints and Coatings
GP 6-31	Cathodic Protection Engineering Design
GP 12-10	Switchgear / Control Gear
GP 12-15	Wire and Cable



GIS 12-101	IEC Low Voltage Switchgear / Control Gear
GIS 12-102	NEMA Low Voltage Switchgear
GIS 12-103	IEC High Voltage Switchgear / Control Gear
GIS 12-104	NEMA High Voltage Switchgear
GIS 12-106	NEMA Low Voltage Motor Controllers
GIS 12-108	NEMA High Voltage Motor Controllers
GP 12-20	Motors
GIS 12-201	IEC Low Voltage Induction Motors
GIS 12-202	NEMA Low Voltage Induction Motors
GIS 12-203	IEC High Voltage Induction Motors
GIS 12-204	NEMA High Voltage Induction Motors
GIS 12-205	IEC Synchronous Motors
GIS 12-206	ANSI/NEMA Synchronous Motors
GP 12-15	Wire and Cable
GIS 12-151	IEC Low Voltage Power Cable
GIS 12-152	NEMA Low Voltage Power Cable
GIS 12-153	IEC High Voltage Power Cable
GIS 12-154	NEMA High Voltage Power Cable
GIS 12-155	IEC Instrument and Control Cable
GIS 12-156	NEMA Instrument and Control Cable
GP 12-45	Guidance on Practice for Electrical for Packaged Systems
GP 18-01	Requirements for Welded Fabrication
GP 30-01	Temperature Instruments
GP 30-05	Pressure Instruments
GP 30-15	Level Instruments
GP 30-25	Field Instruments General
GP 30-35	Control Valves and Pressure Regulators
GP 30-40	Process Automation Systems
GP 30-70	Guidance on Practice for I & C in Vendor Packaged Equipment
GIS 30-402	Guidance on Industry Standard for Programmable Logic Controllers (PLC) Procurement
GP 32-41	Inspection/Testing of Vessels, Tanks, and Exchangers
GP 32-42	Inspection/Testing Piping and Valves
GP 32-47	Protective Devices
GP 32-48	Offshore Installations
GP 32-50	Inspection/Testing of Electrical (ANSI)
GP 32-51	Inspection/Testing of Electrical (IEC)
GP 34-00	Machinery
GP 36-10	Engineering Guidance on Materials Selection
GP 40-10	Structural Skid and Skid Mounted Units
GP 42-10	Metallic Piping Systems
GP 44-70	Overpressure Protection Systems
GP 46-01	New Pressure Vessels
GP 52-10	Guidance on Practice for Thermal Insulation
GP 60-30	Plant and instrument air systems



GP 60-50	General Issues – Equipment Packages
GP 62-01	Valve Selection

Minerals Management Service (MMS)

30 CFR, 250	Subpart A, Oil & Gas Offshore Operations
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National Electrical Manufacturers Association (NEMA)

Enclosure Cabinet Standards

National Fire protection Association (NFPA)

NFPA 70	National Electrical Codes
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Occupational Safety and Health Administration (OSHA)

29 CFR Part 1910.27	Fixed Ladders
29 CFR Part 1910.24	Fixed Industrial Stairs
29 CFR Part 1926	Working and Walking Surfaces
Hazard Communications Rules	

3. Terms and definitions

For the purpose s of this GIS, the following terms and definitions apply:

Parts per million (ppm):

Represents parts per million and shall be given on a weight basis. The abbreviation shall be ppm (w/w). If inconvenient to present data on a weight basis (w/w), it may be given in a volume basis; (v/v) must be stated after the term ppm; e.g., 5 ppm (v/v) or 7 ppm (w/w).

Shall:

States a mandatory requirement, deviation from which requires approval from BP.

Takeoffs

This term refers to branch connections to and from the main header piping.

4. Symbols and abbreviations

For the purpose of this GP, the following symbols and abbreviations apply:

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
BP	British Petroleum
CFR	Code of Federal Regulations
FOI	Floating Offshore Installation



HCR	Hazards Communications Rule
MMS	Minerals Management Service
MSDS	Material Safety Data Sheet
MTR	Material Test Report
NEC	National Electrical Code
NPS	National Piping Size
OD	Outside Diameter
OSHA	Occupational Safety and Health Administration
PPM	Parts Per Million
PSI	Pounds per Square Inch
PVC	Poly Vinyl Chloride
QA	Quality Assurance
SCFM	Standard Cubic Feet per Minute
SS	Stainless Steel
UL	Underwriters Laboratories.

5. Design requirements

5.1. General

- a. Standard air compressor unit equipment shall include:
 1. Compressor which conforms to GP 34-00 requirements.
 2. Driver
 3. Separators
 4. Coolers
 5. Air filters
 6. Oil filters
 7. Instruments
 8. Abnormal shutdown condition sensors
- b. All equipment shall be for jobsite specifications and electrical area classification per NEC Area Classification as indicated on data sheets.
- c. Equipment shall meet all requirements and codes of the location where it is to be installed. Whereas USA codes may be called out in this GIS, the supplier shall agree with BP the applicable and equivalent EU or British codes or others to be used.
- d. All welding shall meet:
 1. GP 18-01,

