



Document No.	GP 59-45
Applicability	Group
Date	23 April 2007

GP 59-45

Field Wireless Network Design

Group Practice

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first issue of Engineering Technical Practice (ETP) GP 59-45. This Guidance on Practice (GP) is ordered to indicate the criteria that shall be involved when designing a wireless field network to provide connectivity to mobile workers or field real-time units (RTUs) for the purpose of gathering operations data remotely.

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1. Scope

This GP provides requirements for the design of wireless field networks. Manufacturers and system types may vary by region based on the governing requirements of local or regional authorities. This GP is intended to be used when specifying systems where mobility or remote operations are desired to gain business efficiency. Locations could include:

- a. Onshore oil and gas fields.
- b. Pipelines.
- c. Warehouses or logistics facilities.
- d. Oil and gas terminals.

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.

BP

GP 12-15	Wire and Cable.
GP 12-25	Earthing (Grounding).
GP 32-46	In Service Inspection and Testing of Onshore Civil/Structural Facilities.
GP 59-07	Network Availability.

British Standards Institute (BSI)

BSI PD CLC/TR 50427	Assessment of inadvertent initiation of flammable atmospheres by radio frequency radiation – Guide.
BSI PD CLC/TR 50426	Assessment of inadvertent initiation of bridge wire electro-explosive devices by radio frequency radiation – Guide.
89/686/EEC	Personal Protective Equipment Directive.

Institute of Electrical and Electronics Engineers (IEEE)

IEEE 802.1x	Port Based Network Access Control.
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International Consortium on Non-Ionizing Radiation Protection (ICNIRP)

Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz).

International Electrotechnical Commission (IEC)

IEC 60079-10	Electrical apparatus for explosive gas atmospheres.
IEC 60331	Fire resisting characteristics of electrical cables.

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.268	Telecommunications Industry.
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Telecommunication Industry Association (TIA)

TIA 222-G

Structural Standard for Antenna Supporting Structures and Antennas.

3. Definitions/abbreviations

3DES	Triple Data Encryption Standard – a data encryption scheme which is generally considered the minimum acceptable level and operates at 128 bits
AES	Advanced Encryption Standard – a data encryption scheme which operates at a minimum of 128 bits
Commercial Wireless	Wireless networks operated by commercial providers that provide data access to any number of paying subscribers. These include, but are not limited to cellular providers and local field data network providers
DS	Digital Security
EDGE	Enhance Data rates for GSM Evolution – a packet switched technology to enable data over GSM networks, generally operating in the 2,75 GHz band
EVDO	Wireless broadband radio standard developed by Qualcomm
iLAN	Traffic which is generally reserved for 3rd party access and only has access to the Internet
GPRS	General Packet Radio Service – a broadband packet switched technology usually used on GSM networks
GSM	Global System for Mobile communications
ISP	Internet Service Provider
MAC	Media Access Control – a unique address assigned by the manufacturer to a network device which identifies it on the network
MIBs	Management Information Bases – data variables which can be extracted using simple network monitoring tools
PCI	Peripheral Component Interconnect – a computer bus standard that allows interface cards to operate within a computer
PCN	Process Control Network
PIN	Process Information Network
RADIUS	Remote Authentication Dial-In User Service – a industry standard user authentication technique
RF	Radio Frequency
RTU	Real-Time Unit
SCADA	Supervisory Control And Data Acquisition – systems which provide control and supervisory information for mechanical devices, such as valves
SLA	Service Level Agreement
SM	Subscriber Module – the Wimax radio component which is located at the remote end of a wireless link
SNMP	Simple Network Management Protocol – an industry standard protocol for collecting network fault and performance data
UPS	Uninterruptible Power Supply – a battery backup for maintaining power if utility power fails

