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NATIONAL IRANIAN OIL REFINING & DISTRIBUTION COMPANY
NATIONAL IRANIAN OIL ENGINEERING
& CONSTRUCTION COMPANY

NIOEC SP

NIOEC SPECIFICATION FOR RADIO COMMUNICATION SYSTEMS

FIRST EDITION

JULY, 2005

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REVISION INDEX

REV. PAGE	1	2	3	4	5	REV. PAGE	1	2	3	4	5	REV. PAGE	1	2	3	4	5	REV. PAGE	1	2	3	4	5
1						26						51						76					
2						27						52						77					
3						28						53						78					
4						29						54						79					
5						30						55						80					
6						31						56						81					
7						32						57						82					
8						33						58						83					
9						34						59						84					
10						35						60						85					
11						36						61						86					
12						37						62						87					
13						38						63						88					
14						39						64						89					
15						40						65						90					
16						41						66						91					
17						42						67						92					
18						43						68						93					
19						44						69						94					
20						45						70						95					
21						46						71						96					
22						47						72						97					
23						48						73						98					
24						49						74						99					
25						50						75						100					

NOTES:

- 1) THIS SHEET IS A RECORD OF ALL REVISIONS TO THIS SPECIFICATION.
- 2) REMARKS RELATED TO EACH REVISION SHOW A BRIEF DESCRIPTION. THESE REMARKS SHALL BE INTERPRETED IN CONJUNCTION WITH THE REVISED TEXT MARKED BY REVISION NUMBERS.
- 3) WHEN APPROVED EACH REVISION SHALL BE CONSIDERED AS A PART OF THE ORIGINAL DOCUMENT.
- 4) NUMBER OF PAGES EXCLUDES THIS SHEET AND THE COVER SHEET.

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CONTENTS	PAGE NO.
1. SCOPE.....	2
2. REFERENCES	2
3. UNITS.....	3
4. DEFINITIONS	3
5. SYSTEM CONFEGURATEON	3
6. RADIO COVERAGE	3
7. SYSTEM DIAGRAM	4
8. BASE STATIONS	5
9. HAND HELD UNITS (T/W)	6
10. MOBILE UNTTS	8
11.ADDITIONAL DESIGN AND INSTALLATION REQUIREMENTS	9
12. RADIO PAGING SYSTEM	12
13. SPARES PARTS SUPPLY	13
14. DESIGN DATA REOUIRMENTS	14
15. GUARANTEES	14

1. SCOPE

This specification defines NIOEC's minimum requirements for the Radio Communication Systems. Deviations from this specification will only be permitted on obtaining written approval from NIOEC.

2. REFERENCES

Throughout this specification the following dated and undated standards and codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this specification. For undated references, the latest edition of the referenced document (including any supplements and amendments) applies. For dated references, the edition cited applies. The applicability of changes in the dated references that occur after the cited date shall be mutually agreed upon by NIOEC and the vendor /contractor.

API (AMERICAN PETROLEUM INSTITUTE)

RP-500 "Recommended Practices for Classification of Locations
for Electrical Installations at Petroleum Facilities"

IEC (INTERNATIONAL ELECTRO TECHNICAL COMMISSION)

IEC-60079-1 "Electrical Apparatus for Use in Class I, Zone 1 Hazardous
(Classified) Locations Type of Protection - Flameproof "d"

IEC-60529 "Classification Of Degree Of Protection Provided By Enclosures"
NIOEC SP (NIOEC SPECIFICATIONS)

[NIOEC-SP-00-10](#) "Standard Specification for Units"

NEC (NATIONAL ELECTRIC CODE)

VDE (VERB AND DEUTSCHER ELEKTROTECHNIKER)

JIS (JAPAN INDUSTRIAL STANDARDS)

ITU (INTERNATIONAL TELECOMMUNICATION UNION)

CEPT (CONFERENCE EUROPEANS DES POSTES ET
TELECOMMUNICATIONS)

CENELEC (EUROPEAN COMMITTEE FOR ELECTRO-TECHNICAL
STANDARDIZATION)

3. UNITS

International System of Units (SI) shall be used in accordance with [NIOEC-SP-00-10](#), unless otherwise specified.

4. DEFINITIONS

In cases where this specification is part of a direct order, Purchaser shall mean the National Iranian Oil Engineering and Construction Company. Where this specification forms part of contract documents, Purchaser shall mean the Contractor. In references to inspection by Purchaser, when this specification forms part of contract documents, this shall be construed to mean that NIOEC shall also have the right of inspection.

5. SYSTEM CONFIGURATION

The radio communication system shall consist of the following subsystems:

- System A: for Refinery Key Personnel and fire fighting
- System B: Radio Paging System (See Section 10.0, for details)
- System C: for Security
- System D: for Operation

For the entire system, VHF-FM radio system shall be employed and the mode of operation shall be of simplex. Each system shall have different frequency in a 150 MHz band.

The supplier shall be responsible for Intermediation and Image frequency calculations and state the results on its proposal.

6. RADIO COVERAGE

Radio coverage of each system shall be as follows:

- System A: Refinery site (by T/W), Road by mobile
- System B: Refinery site up to the fence (by pager)
- System C: Refinery site plus 500 m outside the fence (by T/W)
- System D: Refinery site up to the fence (by T/W)

Coverage criterion to be used is a potential difference of 2uV across the receiver Input at 95% of locations for 95% of time.

Note: For system B thru D, the coverage shall be from the farthest and diametrically opposite location relative to the fence or 500m outside the fence as case may be.

7. SYSTEM DIAGRAM

7.1 Each system's transceiver shall, be controlled through the following equipment.

System A and C : Multi-transceiver control unit with attendant console.
System B : Radio telephone converter
System D : Remote desk sets (RDS's) control unit and
Multi-transceiver control unit.

7.2 A multi-transceiver control unit with system selector and selective call encoder shall be provided. This unit shall provide for 2 simultaneous radio-radio or radio-telephone patching facility.

7.3 The capability of establishing the following categories of communication link shall be provided.

- 1) Mobile (or T/W) to RDS control unit
- 2) Mobile (or T/W) to mobile (or T/W)
- 3) Mobile (or T/W) to attendant console who shall, be able to extend the calls manually to points within the refinery's own telephone system
- 4) Since only system A will be equipped with selcal facilities therefore the attendant console of system A shall have the following capabilities:

- a) To call any one of mobiles (or T/W'S) selectively
- b) To transmit a group call
- c) To transmit a general call
- d) To decode a received identification code and print ID code and time.
- e) To decode a received acknowledgement code and print ACK code and time

5) Each mobile of system A shall be equipped with selcal facilities and shall have the following capabilities:

- a) To decode a selective call from attendant and indicate receipt of a selective call, both visually and by emission of an audio tone.
- b) To transmit an identification code whenever the push to talk switch is pressed.
- c) To transmit an acknowledgement tone whenever a selective call is received.
- d) To be able to selectively call other similarly equipped mobile units.
- e) To transmit and receive a group call.