ICPC Recommendation

Recommendation No. 11

Standardization of Electronic Formatting of Route Position Lists

Note: The presence of a Suffix letter after the Issue number indicates inclusion of updated peripheral information that does not change the wording of this Recommendation.

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Available by request at http://www.iscpc.org or secretariat@iscpc.org

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1. INTRODUCTION

The purpose of this recommendation is to establish a standard format for electronic files of submarine cable system Route Position List (RPL) information in order to simplify data flow between different computer applications. The visual presentation of this information in printed format will be subject to any specific application and may vary at the discretion of the user. This formatting for electronic data files is not intended to supplant the user's normal formatting (column headings, row spacing etc.) for display purposes.

2. RPL FORMAT

For the purpose of distributing submarine cable RPL information, two formats are recommended: one containing extended cable information and one containing basic information. The basic format is a subset of the extended format. Examples of the formats are included as Attachments 1 and 2. Each format will contain two parts: the first being a common header, the second being the body.

2.1. RPL Header (Extended Format)

It is recommended that the following items be listed in the header of the RPL:

- System Name
- Segment Name
- Cable Owner
- RPL Owner
- RPL Status
- Version Number
- Issue Date
- Datum
- Ellipsoid
- Depth Units
- Vertical Datum
- Burial Depth Units
- Distance Calculation Method

Please note below in sections 2.1.1 through 2.1.11, the recommendations on data types, field lengths, precision and numeric sign.

2.1.1. System Name

System Name refers to the full system name. For example, “Global Network 1” would be preferred to “GN-1”. System Name values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: None

2.1.2. Segment Name

Segment Name refers to the full segment name. For example, “North” would be preferred to “N”. Segment Name values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: None

2.1.3. Cable Owner

Cable Owner refers to the company or entity that owns the system. In the case of multiple owners, commas will separate the owner names. Cable Owner values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: No commas within Cable Owner name

2.1.4. RPL Owner

RPL Owner refers to the organization that has the authority to release and / or modify RPL information for the corresponding system. RPL Owner values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: No commas within RPL owner name

2.1.5. RPL Status

RPL Status refers to the design status of the segment. It is recommended that the following classifications be used. Contract, Desktop Study, Survey, As-Laid, or Repair. RPL values will also adhere to the following characteristics:

- Data Type: ASCII Text

- Field Length: Maximum of 15 characters
- Character Restriction: None

2.1.6. Version Number

Version Number refers the identification number of the RPL. This number will correspond to the numbering system used by the Cable Owner or RPL Owner. Version Number values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: None

2.1.7. Issue Date

Issue Date refers to the date on which the RPL was issued by the Cable Owner or RPL Owner. Issue date is to be expressed as DD/MM/YYYY. Issue Date values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: 10 characters
- Character Restriction: Format must be DD/MM/YYYY

2.1.8. Datum

Datum refers to the referenced geodetic datum of the positions listed in the RPL. Datum values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: None

2.1.9. Ellipsoid

Ellipsoid refers to the referenced ellipsoid corresponding to the specified geodetic datum. Ellipsoid values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: None

2.1.10. Depth Units

Depth Units refer to the water depths units of the water depths listed in the RPL. It is recommended that abbreviations not be used. For example, “metres” should be used rather than “m”. Depth Unit values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 7 characters
- Character Restriction: METRES

It is recommended that the metre is the standard unit for water depth.

2.1.11. Vertical Datum

Vertical Datum refers to the base measurement point from which elevations or depths are measured. Vertical Datum values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: None

2.1.12. Burial Depth Units

Burial Depth Units refer to the burial depth units of the burial depths listed in the RPL. It is recommended that abbreviations not be used. For example, "centimetres" should be used rather than "cm". Burial Depth Unit values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 11 characters
- Character Restriction: CENTIMETRES

It is recommended that the centimetre is the standard unit for cable burial depth.

2.2. RPL Body (Extended Format)

It is recommended that the following items be listed in the body of the RPL:

- Event Number
- Event Label
- As Laid Date
- Latitude Degrees
- Latitude Minutes
- Latitude Direction
- Longitude Degrees
- Longitude Minutes
- Longitude Direction

- Water Depth
- Route Distance
- Cumulative Route Distance
- Slack
- Cable Distance
- Cumulative Cable Distance
- Cable Type
- Burial Depth

The purpose of the extended format is to provide additional information during the planning and engineering stage.

2.2.1. Event Number

Event refers to the point reference number or name listed in the RPL. Event Number values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 5 characters
- Character Restriction: None

2.2.2. Event Label

Label refers to the name of the point listed in the RPL. Event Label values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: No commas permitted

2.2.3. As Laid Date

As Laid Date refers to the date when the cable was laid at this location.

- Data Type: Date
- Field Length: Maximum of 11 characters
- Character Restriction: dd-mmm-yyyy

2.2.4. Latitude Degrees

Latitude Degrees refers to the whole degree portion of the latitude. Latitude Degrees values will also adhere to the following characteristics:

- Data Type: Integer
- Field Length: 2 digits
- Restrictions: DD
- Validation: 0 through 90

Note – "plus" or "minus" signs are not required as a separate field denotes the direction North or South.

2.2.5. Latitude Minutes

Latitude Minutes refers to the fractional minute's portion of the latitude. It is to be expressed in decimal minutes to three decimal places of precision. Latitude Minutes values will also adhere to the following characteristics:

- Data Type: Float
- Field Length: 2 places before and 3 places after decimal point
- Restrictions: MM.MMM
- Validation: 00.000 through 59.999

2.2.6. Latitude Direction

Latitude Direction refers to whether the latitude is north or south of the Equator. It is recommended that "N" indicates positions north of the Equator and "S" indicates positions that are south of the Equator. Latitude Direction values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 1 character
- Character Restriction: N or S only

2.2.7. Longitude Degrees

Longitude Degrees refers to the whole degree portion of the longitude. Longitude Degrees values will also adhere to the following characteristics:

- Data Type: Integer
- Field Length: 3 digits
- Restrictions: DDD
- Validation: 000 through 180

Note – “plus” or ”minus” signs are not required as a separate field denotes the direction East or West.

2.2.8. Longitude Minutes

Longitude Minutes refers to the fractional minute’s portion of the longitude. It is recommended that it be expressed in decimal minutes to three decimal places of precision. Longitude Minutes values will also adhere to the following characteristics:

- Data Type: Float
- Field Length: 2 places before and 3 places after decimal point
- Restrictions: MM.MMM
- Validation: 00.000 through 59.999

2.2.9. Longitude Direction

Longitude Direction refers to whether the latitude is east or west of the Prime Meridian. It is recommended that “E” indicates positions east of the prime meridian and “W” indicates positions west of the prime meridian. Longitude Direction values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 1 character
- Character Restriction: W or E only

2.2.10. Water Depth

Water Depth refers to the depth of water at the corresponding latitude and longitude. It is recommended that the water depth be expressed to the nearest whole metre. Water Depth values will also adhere to the following characteristics:

- Data Type: Integer
- Field Length: 5 digits
- Validation: 0 through 99999

2.2.11. Route Distance

Route Distance refers to the route distance between two adjacent points. It is to be expressed in kilometres to three decimal places of precision. Route Distance values will also adhere to the following characteristics:

- Data Type: Float
- Field Length: Maximum of 3 places after decimal point
- Restrictions: CCCC.CCC

- Validation: 0 through 9999.999

2.2.12. Cumulative Route Distance

Cumulative Route Distance refers to the running cable route distance. It is recommended that the distance be expressed in kilometres to three decimal places of precision. Cumulative Route Distance values will also adhere to the following characteristics:

- Data Type: Float
- Field Length: Maximum of 3 places after decimal point
- Restrictions: CCCCC.CCC
- Validation: 0 through 99999.999

2.2.13. Cable Slack

Cable Slack refers to the percentage of route distance between RPL positions applied to the cable to accommodate seafloor undulations. It is recommended that the distance be expressed in to four decimal places of precision. For example, 1.55% would be expressed as 0.0155 Cable Slack values will also adhere to the following characteristics:

- Data Type: Float
- Field Length: Maximum of 4 places after decimal point
- Restrictions: CCC.CCCC
- Validation: 0 through 0.9999

2.2.14. Cable Distance

Cable Distance refers to the total cable distance between two adjacent RPL positions. It is to be expressed in kilometres to three decimal places of precision. Section Distance values will also adhere to the following characteristics:

- Data Type: Float
- Field Length: Maximum of 3 places after decimal point
- Restrictions: CCCC.CCC
- Validation: 0 through 9999.999

2.2.15. Cumulative Cable Distance

Cumulative Cable Distance refers to the running cable distance. It is recommended that the distance be expressed in kilometres to three decimal places of precision. Cumulative Distance values will also adhere to the following characteristics:

- Data Type: Float

- Field Length: Maximum of 3 places after decimal point
- Restrictions: CCCCC.CCC
- Validation: 0 through 99999.999

2.2.16. Cable Type

Cable Type refers to the type of cable being used or planned up to the corresponding point position in the RPL. Cable types are based on those provided by their respective suppliers. Cable Type values will also adhere to the following characteristics:

- Data Type: ASCII Text
- Field Length: Maximum of 256 characters
- Character Restriction: Commas not permitted

2.2.17. Burial Depth

Burial Depth refers to the total achieved burial at the corresponding point position. It is recommended that the depths be expressed in centimetres to the nearest whole centimetre. Burial Depth values will also adhere to the following characteristics:

- Data Type: Integer
- Field Length: 4 digits
- Validation: 0 through 9999

2.3. RPL Header (Basic Format)

The RPL header of the basic for is a subset of the extended format. The basic format contains the following items: System Name, Segment Name, Cable Owner, RPL Owner, RPL Status, Version Number, Issue Date, Datum, Ellipsoid, Depth Units, and Vertical Datum. All items carry the same format and definition and described in sections 2.1.1 through 2.1.11

2.4. RPL Body (Basic Format)

The RPL body of the basic format is a subset of the extended format. The basic format contains the following items: Event Number, Event Label, Latitude Degrees, Latitude Minutes, Latitude Direction, Longitude Degrees, Longitude Minutes, Longitude Direction, and Water Depth. All items carry the same format and definition as described in sections 2.2.1 through 2.2.9

3. Definitions

Term	Definition
ASCII	American Standard Code for Information Interchange -- the de facto world-wide standard for the code numbers used by computers to represent all the upper and lower-case Latin letters, numbers, punctuation, etc.
(geodetic) Datum	The legally adopted ellipsoid for a region
Ellipsoid	A geometric (spheroid) model of the earth
RPL	Route Position List

4. Attachments

Document Number	Title
Attachment 1	ICPC RPL Recommendation Extended Format
Attachment 2	ICPC RPL Recommendation Basic

Attachment 1

Example of RPL Format Containing Extended Information

Serpent
North
Telecom.com
Cable Installers Incorporated
Route Survey
1B
01/01/2001
WGS84
WGS84
Metres
LAT
CENTIMETRES
GREAT CIRCLE
P0,Start Segment North_1,22-mar-
2010,45,58.5441,N,59,58.2825,W,000,000.000,000.000,0.0155,000.000,000.000,DA,000
P1, 22-mar-2010,AC_1,45,39.4195,N,59,05.7579,W,080,068.950,068.953,0.0155,070.019,070.019,DA,149
P2, 22-mar-2010,AC_2,45,28.8196,N,57,41.9785,W,100,100.660,169.613,0.0155,102.220,172.239,DA,165
P3, 22-mar-2010,AC_3,45,31.4727,N,55,24.5114,W,150,166.660,336.273,0.0155,169.243,341.482,DA,175
P4, 23-mar-2010,AC_4,45,56.5727,N,54,20.1259,W,075,091.300,427.570,0.0155,092.715,434.197,DA,139
P5, 23-mar-2010,End Segment
North_1,46,35.8192,N,53,06.2013,W,000,117.080,544.648,0.0155,118.895,553.092,DA,000

Attachment 2

Example of RPL Format Containing Basic Information

Serpent
North
Telecom.com
Cable Installers Incorporated
Route Survey
1B
01/01/2001
WGS84
WGS84
Metres
LAT
P0,BMH1,45,58.5441,N,59,58.282500,W,00000
P1,AC_1,45,39.4195,N,59,05.757900,W,00080,
P2,AC_2,45,28.8196,N,57,41.978500,W,00100
P3,AC_3,45,31.4727,N,55,24.511400,W,00150
P4,AC_4,45,56.5727,N,54,20.125900,W,00075
P5,BMH2,46,35.8192,N,53,06.201300,W,00000