



International Rock Excavation Data Exchange Standard

IREDES V2.0

Standard documentation

**Part 2
Drill Rigs and Bolters**

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1 Document Information

1.1 Change history:

<i>Date</i>	<i>Initials</i>	<i>Vers</i>	<i>Major Changes made</i>
16.02.20	CM	1	Initial release for IREDES Drill Rigs 2.0 – change log only

1.2 Document Draft Information

Sections in which the document is regarded incomplete or where specific topics are not complete or missing, related text or resulting questions are written in bold italics embraced by []:

[This topic has to be added...]

1.3 Disclaimer

This is an uncorrected, not reviewed and not formally released draft of a development document still in the progress of being set up.

This document therefore is not a formally binding standard specification nor of any contractual relevance. Until officially released, it may not be used for development of equipment or software claiming IREDES standard compliance.

The document is used to reflect the ongoing status of standard development. Copyright and all rights reserved by the IREDES initiative.

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2 Introduction

IREDES is a flexible standard architecture for convenient worksite information exchange in the mining industry. It is used for information exchange between mainly mobile equipment and devices on one side and central computer systems on the other side. Also Machine-to-Machine (“M2M”) communication is covered to a certain extend. Excluded from the standard is any direct communication related to machine remote control as this is inside the product responsibility of the respective suppliers.

The standard covers definitions of how to exchange information and what kind of content is exchanged.

The standard consists of different parts:

IREDES Part 0: General definitions and standard architecture (This document)

IREDES Part 1: Generic and equipment type independent parts used in common in all specific parts of the standard: Application Profiles, Commonly Used Objects

IREDES Part 2: Drill Rigs and Bolters

IREDES Part 3: Explosives Chargers

IREDES Part 4: LHD's, Trucks and rubber tire based transportation vehicles

IREDES Part 5: Tracking, Messaging and Work order handling

These standard parts are being extended basing on the demands of the IREDES members.

3 Scope of this document

This document describes the Equipment Profile for Drill Rigs of the information exchange following the IREDES standard. These definitions are applicable to all other parts of the standard in identical way. This document does not cover any equipment type specific definitions.

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4 Normative References

Normative references are to be given in ISO standardized format:

ISO #####-#:20##, General title — Part #: Title of part

5 Terms and definitions

For definitions of general terms please refer to Part 0 of the IREDES standard documentation. This chapter focuses mainly on the Drill Rigs Equipment Profile specific information, just added by few important generic terms.

5.1 Commonly Used Objects

Definitions in the standard which are used in identical form by different profiles. Explained in detail in Part 1 of the standard documentation

5.2 Drill Rig

Machine which drills 1-n holes into the ground or rock into different target directions from one single machine setup position

5.3 IREDES

International Rock Excavation Data Exchange Standard.

6 Drill Rigs Equipment Profile

The Equipment Profile covers all kind of Drill Rigs.

The following IREDES Data Sets can be exchanged independently from each other and depending on the technical ability of the particular machine to handle the respective information:

Profile	Purpose	Transfer
DRPPLAN (chapter 7)	Drill Plan for setup of the Drill Rig and for declaration of the Drill Patterns. To be known by the machine before the round starts	Machine RECEIVES
DRPQUAL (chapter 8)	Information about how a certain Drill Plan was drilled in reality. To be created by the machine after a round is finished	Machine SENDS
DRPPERF (chapter 9)	Information about the machine's performance ("Meters") during a certain time period (shift, day,...)	Machine SENDS

All profiles (root elements in the Drill Rigs XML Schema) can be transferred independently from each other.

6.1 Changes to previous versions

In Version 2.0 a number of corrections and practice related structural changes were performed:

IREDES V2.0 bases on the XML Schema definition Version 1.1 (earlier versions were 1.0)

In general, the version tags together with the downward compatibility tags were changed to V2.0, meaning that a correct processing using software prepared for previous versions cannot be assured.

6.1.1 DRPPlan

The setup of the DRPPlan structure was changed to better reflect the working sequence of a Drill Rig and to enable an independent transfer of Location Reference Data (*DRPLrefData*), Drill Pattern setup data (*DrillPatternData*) to set up the Drill Rig at the position specified in *DRPLrefData* and *DrillPlan* specifying the Drill Pattern to be performed. See picture 1 in chapter 7.

Thereby different Drill Patterns can be loaded to the rig independently from the setup position and independently from the location of the rig in the tunnel. This fact led to the obsolescence of the tag *PositionData* used in earlier versions.

In *DRPLrefData* the ***TunLineref*** entry as a specification for a Tunnel Line is now optional as many rigs are operated without a tunnel line locally available.

The *DRPLrefData* tag also is optional to allow Drill Rigs to be operated with electronic Drill Plans but without an electronically defined setup position.

In the *Hole* tag definitions, the following change have been performed:

HoleType now is mandatory for better follow up reasons

All Drill Bit information (type, diameter, change information) has been collected in the new tag *DrillBit*. Type and Diameter are mandatory, the *DrillBitChange* tag is optional and is used inside the drill plan only to state whether a Drill Bit change shall be forced prior to drilling the respective hole.

At *DrillBitType* the selection enumeration “undefined” was removed as there already is a selection option “others”

The max occurrence value of the *Sequence* tag in *BoomSequence* was reduced from 1000 to 100.

All tags were checked for specification and constraints resulting in minor changes and additional explanations.

6.1.2 DRPQUAL

DrillQuality tag was declared mandatory

FlushMode: “*undefined*” removed as redundant with “*others*”

All timing information about a single hole was accumulated in the tag “*HoleTiming*”

There still is the proposal to move the Bolting information to a separate root element. Comments welcome!