OPERATING CODE:

OC 8 : SAFETY COORDINATION

By :

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22 January 2014

KeTTHA
KEMENTERIAN TENAGA, TEKNOLOGI HIJAU DAN AIR

Suruhanjaya Tenaga

The Malaysian Grid Code Awareness Programme Funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE)

OC 8 : SAFETY COORDINATION

OC 8.1	Introduction
Used by the GSO and Users	Specifies the standard procedures to be used by the GSO and Users
Safety Precautions	co-ordination, establishment and maintenance of necessary Safety Precautions
work is to be carried out	when work is to be carried out on the Grid System or a User System and when there is a need for Safety Precautions on HV Apparatus on the other User's System for this work to be carried out safely.

OC 8 : SAFETY COORDINATION

OC 8.1	Objectives
Establish the requirement in accordance with approved safety regulations	(1) establish the requirement on the GSO and Users (or their contractors) to carry out work on the Grid System or User System respectively in accordance with approved safety regulations;
Ensure safe working condition	(2) ensure safe working conditions for personnel working on or in close proximity to Plant and Apparatus on the Grid System or personnel who may have to work at or use the equipment at the interface between the Grid System and a User System.

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OC 8.3	Scope
Users Total 8	(1) Generators with CDGUs; (2) All Generators with Generating Units not subject to Dispatch by the GSO, with total on-site generation capacity equal to or greater than 30 MW where the GSO considers it necessary; (3) Network Operators; (4) Grid Owner; (5) Distributors (6) Directly Connected Customers where the GSO considers it necessary; (7) Interconnected Parties; and (8) any other party or responsible person employed by a User and accepted by the GSO.

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OC 8.3	Scope (cont')
PTW procedure for Live work	For Live Apparatus Work, safety precautions and coordination are also required and must be subject to permit to work procedures.
Safety will remain as responsibility of the User	In the case where a User employs another party or a responsible person, the responsibility for safety and all other matters pursuant to this OC8 shall remain the responsibility of the User.

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OC 8.4	Procedures for Local Safety Instructions, Coordinators and Records of Safety Precautions
Does not impose particular safety rules	OC8 does not seek to impose a particular set of Safety Rules on the Grid Owner and other Users.
Safety Rules chosen by each party's management	The Safety Rules to be adopted and used by the Grid Owner and each User shall be those chosen by each party's management.

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OC 8.4	Procedures for Local Safety Instructions, Coordinators and Records of Safety Precautions
At all Grid Supply Points Safety Rules to be used shall be as determined by the Grid Owner	At all Grid Supply Points, the Safety Rules to be used by both the Grid Owner and the associated Users shall be as determined by the Grid Owner after consultation with the GSO.
Competencies certified by the Grid Owner as allowed by the Energy Commission.	Competencies of the Grid Owner personnel and User's staff may be certified by the Grid Owner as allowed by the Energy Commission.

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OC 8.4.1	Defined Terms
HV Apparatus	"HV Apparatus" means High Voltage electrical Apparatus forming part of a Network to which "Safety Precautions" must be applied to allow work to be carried out on that Network or a neighbouring Network.

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OC 8.4.1	Defined Terms
Isolation	"Isolation" means the disconnection or separation of HV Apparatus from the remainder of the Network in accordance with the following:
Maintained in an isolating position	(a) an Isolating device maintained in an isolating position. The isolating position must be either:

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OC 8.4.1	Defined Terms
Maintained by immobilising and/or locking	(i) maintained by immobilising and/or locking of the isolating device in the isolating position and affixing an "Isolation Notice" to it. Where the isolating device is locked with a "Safety Key", the Safety Key must be retained in safe custody; or
Secured by electronic at least two (2) passwords	(ii) maintained and/or secured by electronic means provided that the entry of at least two (2) passwords are required before an action can be implemented; or
other method in accordance with the "Local Safety Instructions"	(iii) maintained and/or secured by such other method which must be in accordance with the "Local Safety Instructions" of the Network Controller or that User, as the case may be;

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OC 8.4.1	Defined Terms
Isolation	"Isolation" means the disconnection or separation of HV Apparatus from the remainder of the Network in accordance with the following:
an adequate physical separation in accordance with Local Safety Instructions	(b) an adequate physical separation which must be in accordance with, and maintained by, the method set out in the Local Safety Instructions of the Network Controller or that User, as the case may be, and, if it is a part of that method, an Isolation Notice must be placed at the point of separation.

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OC 8.4.1	Defined Terms
Earthing	"Earthing" means a way of providing a connection between HVconductors and earth by an Earthing device which is either:
Immobilised and locked	(a) immobilised and locked in the Earthing positions. Where the Earthing device is locked with a Safety Key, the Safety Key must be secured and kept in safe custody; or
In accordance with the Local Safety Instructions	(b) maintained and/or secured in position by such other method which must be in accordance with the Local Safety Instructions of the Network Controller or that User as the case may be; or
Temporary Earthing	(c) temporary Earthing immediately adjacent to the area or work.

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OC 8.4.1	Defined Terms
Safety Precautions	"Safety Precautions" means Isolation and/or Earthing.
Network Controller	"Network Controller" means the network control centre that is responsible for that part of the Transmission Network or Distribution Network that the User has its Grid Supply Point on.

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OC 8.4.2	Local Safety Instructions
Safety Rules to be made more stringent	Either party may require that the Isolation and/or Earthing provisions in the other party's Safety Rules to be made more stringent by the issue by that party of a Local Safety Instructions affecting the Grid Supply Point concerned
Procedures for Interconnected Party set out in the IOM	The procedures for the establishment of safety coordination by the GSO with an Interconnected Party are set out in the IOM applicable to each Interconnected Party.

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OC 8.4.3	Safety Coordinators
User nominate Safety Coordinator - responsible for the coordination of work	For each Grid Supply Point each User will at all times have a person nominated as “Safety Coordinator", to be responsible for the coordination of safety precautions when work is to be carried out on a Network, which necessitates the provision of Safety Precautions on HV Apparatus as required by this OC8.
Safety Coordinator may be responsible at more than 1 Grid Supply Point	A Safety Coordinator may be responsible for the coordination of safety on HV Apparatus at more than one Grid Supply Point.
Names of Safety Coordinator given in writing	The names of these Safety Coordinators will be notified in writing to the Network Controller by Users.

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OC 8.4.3	Safety Coordinators
Safety Coordinator shall be authorised by the GSO on behalf of the Energy Commission (Grid Owner) Or By EC (User)	Each Safety Coordinator shall be authorised by the GSO on behalf of the Energy Commission in the case of the Grid Owner or by the Energy Commission in the case of a User, as the case may be, as competent to carry out the functions set out in this OC8 to achieve safety from the Grid System. Only persons with such authorisation will carry out the provisions of this OC8. Each safety coordinator for a User will be a company nominated Energy Commission competent person.

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OC 8.4.3	Safety Coordinators
Contact/communication between Safety Coordinators and the Network Controller	Contact between Safety Coordinators and the Network Controller will be made via normal operational channels and accordingly separate telephone numbers for Safety Coordinators shall be provided to the Network Controller. At the time of making contact, each User will confirm to the Network Controller that they are authorised to act as Safety Coordinator, pursuant to this OC8.

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OC 8.4.3	Safety Coordinators
Work on Network, Network Controller will contact the relevant "Implementing Safety Coordinator"	If work is to be carried out on a Network which necessitates the provision of Safety Precautions on HV Apparatus in accordance with the provisions of this OC8, the "Requesting Safety Coordinator" who requires the Safety Precautions to be provided will contact the Network Controller who will contact the relevant "Implementing Safety Coordinator" to co-ordinate the establishment of the Safety Precautions

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OC 8.4.4	**RISP (**Record of Inter-System Safety Precautions)
	Procedures for utilising the "Record of Safety Precautions" ("RISP") between Users through the Network Controller.
RISP - A	"RISP-R", shall be used when the GSO is the Requesting Safety Coordinator,
RISP - B	"RISP-I", shall be used when the GSO is the Implementing Safety Coordinator.

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OC 8.4.5	Co-ordination of Work on Apparatus
Notification about work/test	Each Party (Requesting) shall notify the other Party (Implementing) by the middle of each month about work/test that it intends to carry out the following month which will require Isolation and Earthing at the other Party (Implementing)'s System.
Implementing party to reply within 7 days	On receipt of such notice, the Implementing Party shall reply within seven (7) days state whether such work and/or test can be carried out on the date requested. If not, alternate date shall be suggested.
End of month, schedule	By the end of each month, the GSO will have a programme of scheduled work that is to be carried out that requires the Isolation and/or Earthing of the Transmission System and User's Systems.

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OC 8.4.5	Co-ordination of Work on Apparatus
Emergency work - Agreement must be confirmed in writing before any work.	Should an emergency arise that requires work to be done on Apparatus that needs Isolation and/or Earthing to be done on the Transmission System and/or User's Systems, and for which the required notice under this OC8.4.5 cannot be given, then co-ordination can be done via telephone, fax or any other electronic means, but any request and agreement must be confirmed in writing before any work, Isolation or Earthing is carried out.

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OC 8.5	Safety Precautions for HV Apparatus
Agreement of Safety Precautions	When Implementing Safety Coordinator is of the reasonable opinion that it is necessary for Safety Precautions on the System of the Requesting Safety Coordinator, RISP Part 1 should be filled
In the Event of Disagreement	Requesting Safety Coordinator and the Implementing Safety Coordinator are unable to agree the Location of the Isolation and (if requested) Earthing, then this shall be at the closest available points on the infeeds to the HV Apparatus

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OC 8.5	Safety Precautions for HV Apparatus
Implementation of Isolation	Implementing Safety Coordinator shall confirm to the Requesting Safety Coordinator that the agreed Isolation has been established
Implementation of Earthing	Implementing Safety Coordinator shall then establish the agreed Earthing.
Competencies and Training	It is the responsibility of the Grid Owner and each User individually to ensure that each member of their respective staffs will be fully competent to do work and has been fully trained in all aspects of Safety Co-ordination. Such members of staff shall be authorised,

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OC 8.6	Testing and Re-energisation
Testing	Requesting Party should confirm from the Implementing Party that no person is working or testing or has been authorized to work or test on any part of the System
-Earthing removed	Earthing as stated in the RISP Form may be removed during the Test and for testing purposes only and must be agreed by both and properly recorded.

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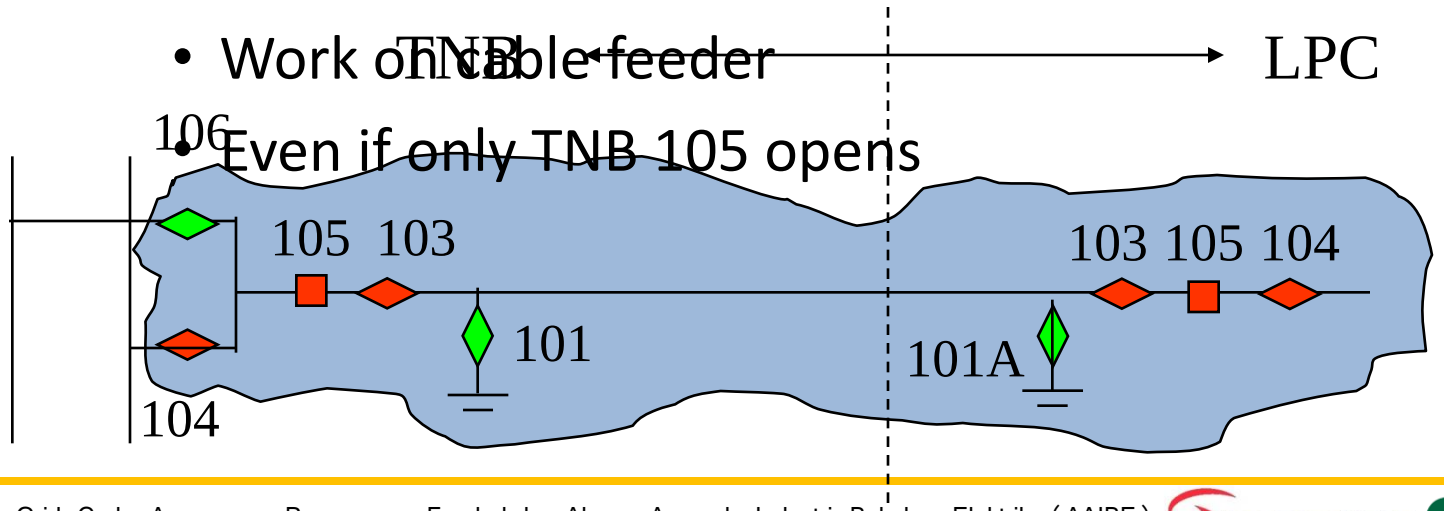
OC 8.6	Testing and Re-energisation
Re-energisation - Complete Part 3 of RISP	Requesting Party should then cancel the form by signing Part 3 and the Implementing Party confirms the cancellation by signing Part 3.
1)Switching sequence	(1) The switching sequence for normalization of the System should be carried as listed in the switching form.
2) Switching written down	(2) All switching done should be written down and repeated to the other Party who should then read back for confirmation.
3) Chronological order	(3) All switching done should be recorded in chronological order.

RISP (Record of Interconnection Safety Precaution)

- WHY DO WE NEED TO USE RISP
  - Coordination of switching and isolation
  - To record isolation and earthing
  - To notify each party of work in progress
  - To prevent inadvertent energisation that could lead to an accident **(may not completely prevent but is part of the overall defense against failures)**
  - To prevent potentials for future incidents

RISP (Record of Interconnection Safety Precaution)

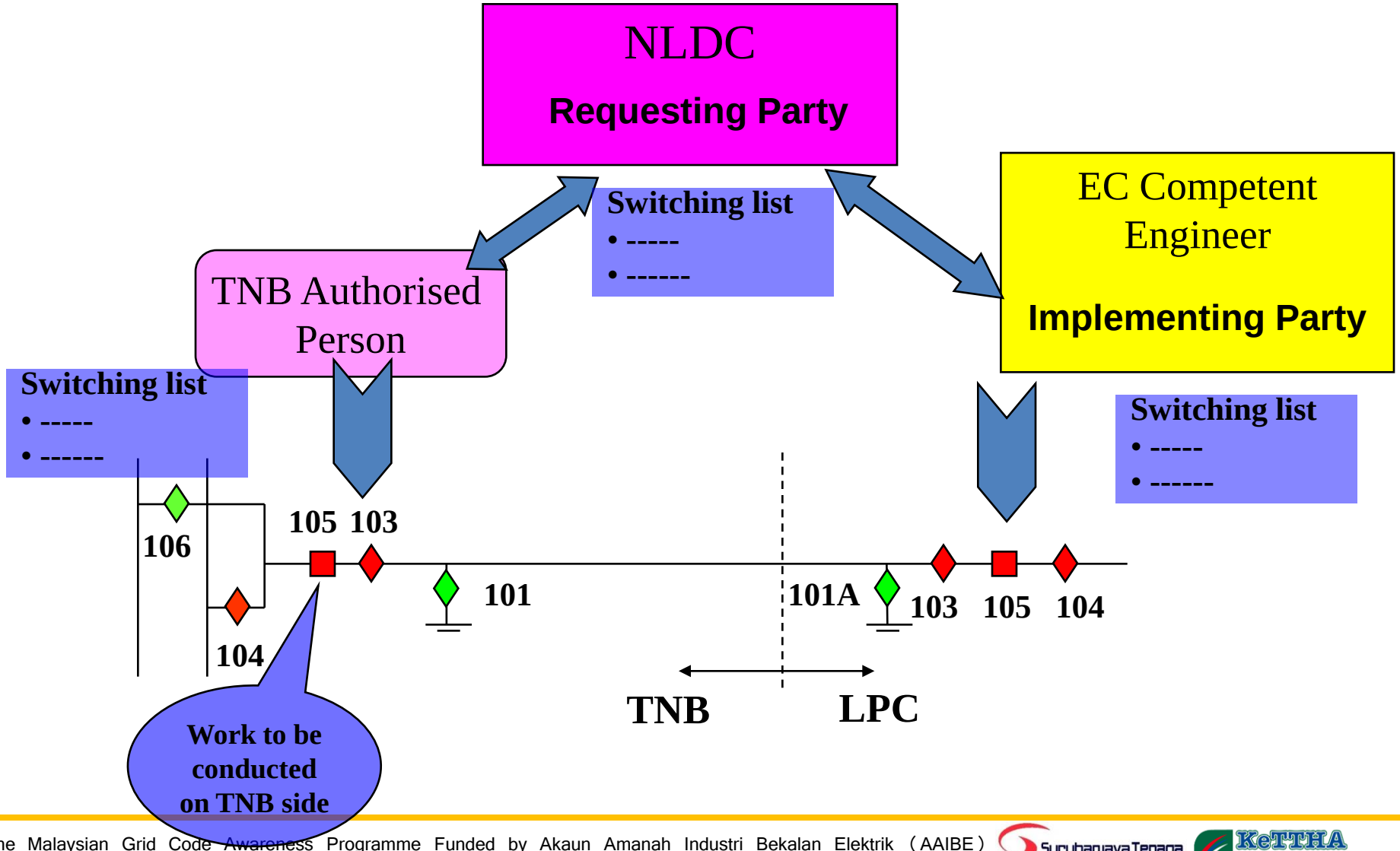
- WHEN IS RISP APPLIED
  - Whenever there is operation and work is to be carried out at the interconnection facilities.
  - Example
    - Work on TNB 105
    - Work on LPC 105
    - Work on TNB cable feeder
    - Even if only TNB 105 opens



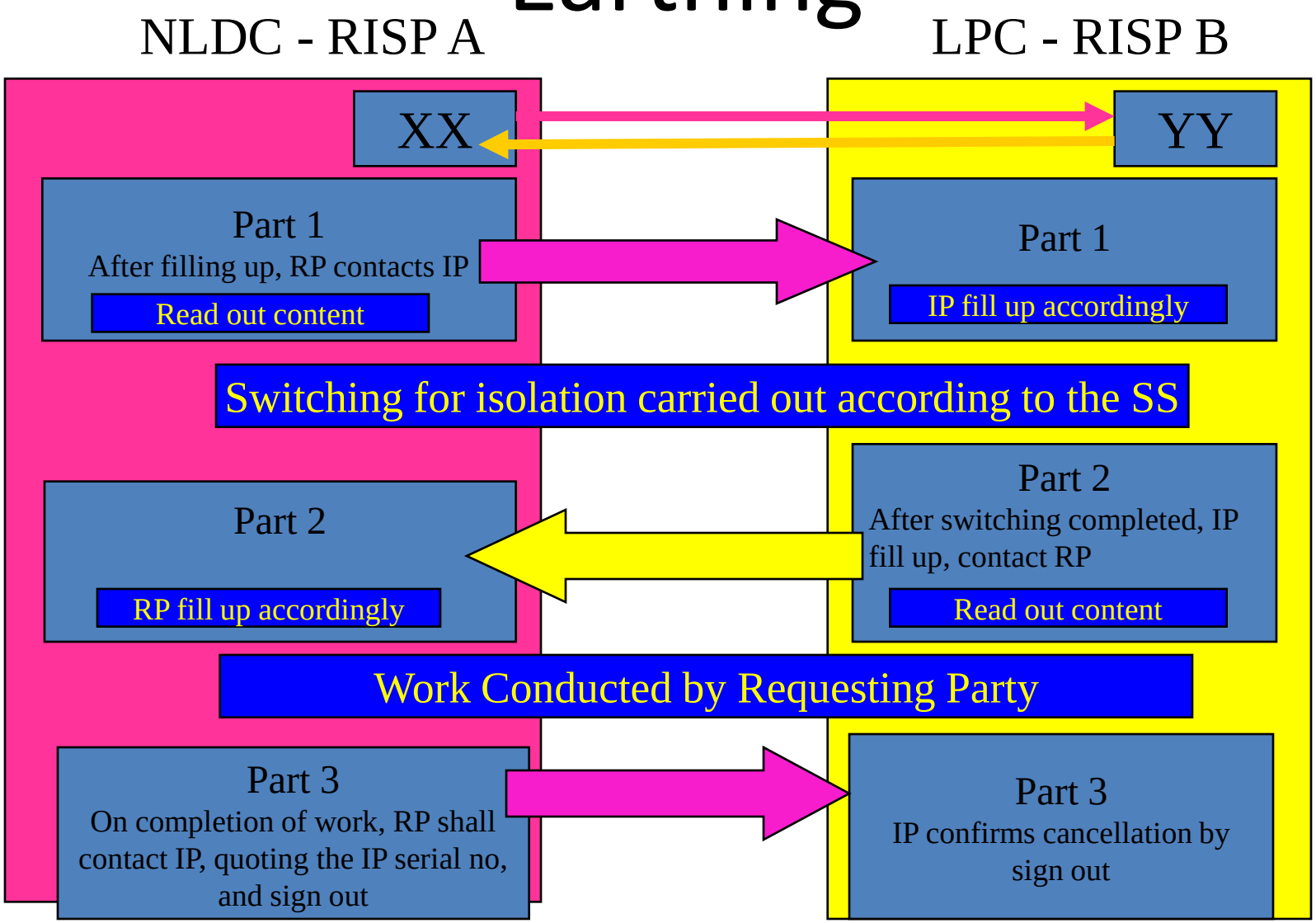
RISP – FORMS

- **RISP A (Pink)**
  - Completed by the Requesting Safety Coordinator, the Engineer who wishes to establish safety from the system
- **RISP B (Yellow)**
  - Completed by the Implementing Safety Coordinator, the Engineer who implements the request to provide safety from the system
- RISP A & B are prenumbered. The number being referred to and recorded in the blank number box on the Requesting and Implementing Party's RISP forms.

Key Players in the implementation of RISP



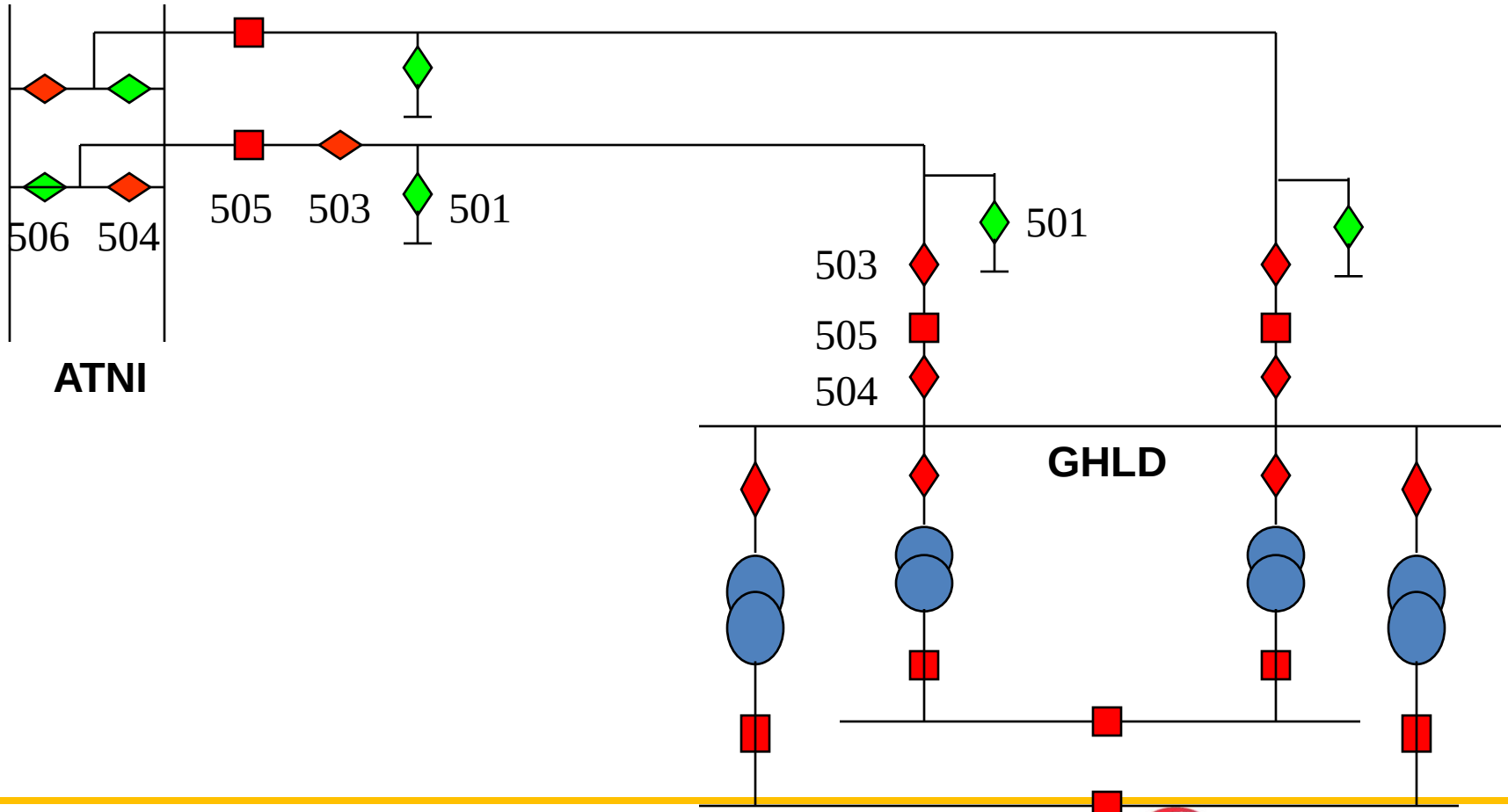
Recording of Isolation and Earthing



ILLUSTRATION

Case study:

TNB request for outage on AVETANI to GENTING HIGHLAND (ATNI-GHLD) 132kV line No.1 for cross arm replacement



RECORD OF INTERCONNECTION SAFETY PRECAUTIONS (RISP- A)

RISP A No: A **01172**
(Requesting Safety Coordinator's Copy)

RISP B No: **03373**
(Implementing Safety Coordinators)

Part 1

1.1 H.V. APPARATUS IDENTIFICATION

1.2 I, ...**Kennedy**.....(the Requesting Safety Coordinator) located at .....**NLDC**..... declare that I would like to carry out work on the following Apparatus:

.....**132KV ATNI-GHLD NO.1 – CROSSARM REPLACEMENT**.....

1.3 Mr.....**Khaidir**.....(the Implementing Safety Coordinator) has declared that he will carry out work on the following Apparatus.....**- Nil -**.....

1.4 SAFETY PRECAUTIONS ESTABLISHED BY THE REQUESTING SAFETY CO-ORDINATOR :
State location, nomenclature, and number of each point of isolation and earthing to be implemented.

ISOLATION : **ATNI 505,503, 504 OP 506 CHECK OP**
EARTHING : **ATNI 501 CL**

1.5 SAFETY PRECAUTIONS REQUESTED BY THE REQUESTING SAFETY CO-ORDINATOR ISOLATION :
State location, nomenclature, and number of each point of isolation requested.

ISOLATION : **GHLD 505, 503, 504 OP**
EARTHING : **GHLD 501 CL**

Signed: ..... Date: 27/7/13 Time: 16:36
The Requesting Safety Coordinator.

RECORD OF INTERCONNECTION SAFETY PRECAUTIONS (RISP –B)

RISP-B No: B 03373 **RISP A No:** 01172

(Implementing Safety Coordinator's Copy) **(Requesting Safety Coordinators)**

Part 1

1.1 H.V. APPARATUS IDENTIFICATION

1.2 Mr, ... Kennedy ..... (the Requesting Safety Coordinator) located at ..... NLDC ..... declare that he would like to carry out work on the following Apparatus:

..... 132KV ATNI-GHLD NO.1 – CROSSARM REPLACEMENT .....

1.3 I, ... Khaidir .....(the Implementing Safety Coordinator) has declared that I will carry out work on the following Apparatus..... - Nil - .....

1.4 SAFETY PRECAUTIONS ESTABLISHED BY THE REQUESTING SAFETY CO-ORDINATOR :
State location, nomenclature, and number of each point of isolation and earthing to be implemented.

ISOLATION : ATNI 505,503, 504 OP 506 CHECK OP .....
EARTHING : ATNI 501 CL .....

1.5 SAFETY PRECAUTIONS REQUESTED BY THE REQUESTING SAFETY CO-ORDINATOR ISOLATION :
State location, nomenclature, and number of each point of isolation requested.

ISOLATION : GHLD 505, 503, 504 OP .....
EARTHING : GHLD 501 CL .....

Signed: ..... Date: 27/7/13 Time: 16:36

The Implementing Safety Coordinator.

Part 2

2.1 CONFIRMATION OF ISOLATION AND EARTHING BY REQUESTING SAFETY COORDINATOR AND IMPLEMENTING SAFETY COORDINATOR.

2.2 Mr, Kennedy .....(the Requesting Safety Coordinator), located at NLDC .....has confirmed to me Khaidir .....(the Implementing Safety Coordinator) located at GHLD .....that the SAFETY PRECAUTION as mentioned in Section 1.4 of this RISP **has been established.** The switches have been immobilised, locked and Notices have been affixed.

2.3 I, Khaidir .....(the Implementing Safety Coordinator), located at GHLD .....have confirmed to Mr Kennedy .....(the Requesting Safety Coordinator), located at NLDC .....that the SAFETY PRECAUTIONS as mentioned in section 1.5 **has been established**. The switches have been immoblised, locked, and Notices have been affixed.

No instructions will be issued at locations as specified in 1.4 and 1.5 for their removal until this RISP is cancelled under Part 3.

Signed: ..... Date : 27/7/13 Time: 17:35

The Implementing Safety Coordinator.

Part 2

2.1 CONFIRMATION OF ISOLATION AND EARTHING BY REQUESTING SAFETY COORDINATOR AND IMPLEMENTING SAFETY COORDINATOR.

2.2 I, ...Kennedy.....(the Requesting Safety Coordinator), located at .....NLDC..... confirm to .....Khaidir.....(the Implementing Safety Coordinator) located at .....GHLD.....that the SAFETY PRECAUTION as mentioned in Section 1.4 of this RISP **has been established.** The switches have been immobilised, locked and Notices have been affixed.

2.3 Mr.....Khaidir.....(the Implementing Safety Coordinator), located at.....GHLD..... has confirmed to me that the SAFETY PRECAUTIONS as mentioned in section 1.5 **has been established**. The switches have been immoblised, locked, and Notices have been affixed.
No instructions will be issued at locations as specified in 1.4 and 1.5 for their removal until this RISP is cancelled under Part 3.

Signed: . ..... Date :.....27/7/13..... Time:.....17:35.....
The Requesting Safety Coordinator.

Part 3

3.1 CANCELLATION

Cancellation of this RISP must only be done after both parties have confirmed completion of work as mentioned in Section 1.2 and 1.3.

3.2 I, ……Kennedy…… (the Requesting Safety Coordinator), located at ……NLDC…….. declared that the work as mentioned in Section 1.2 is completed.

Signed : ……. Date : ……28/7/13 Time:……17:00……

The Requesting Safety Coordinator.

3.3 Mr. ……Khaidir……(the Implementing Safety Coordinator), located at ……GHLD……, has confirmed that the work as mentioned as Section 1.3 is complete.

Signed : ……. Date : ……28/7/13 Time:……17:00……

The Requesting Safety Coordinator.

3.4 I, ……Kennedy……(the Requesting Safety Coordinator), located at ……NLDC…….and Mr. ……Khaidir……(the Implementing Safety Coordinator), located at ……GHLD…….agree that This RISP is hereby cancelled.

Signed : ……. Date : ……28/7/13 Time:……17:00…….

The Requesting Safety Coordinator.

Part 3

3.1 CANCELLATION

Cancellation of this RISP must only be done after both parties have confirmed completion of work as mentioned in Section 1.2 and 1.3.

3.2 Mr,……Kennedy…… (the Requesting Safety Coordinator), located at ……NLDC…… has .comfirmed that the work as mentioned in Section 1.2 is completed.

Signed : …….. Date : ……28/7/06… Time:……17:00……

The Implementing Safety Coordinator.

3.3 I, ……Khaidir……(the Implementing Safety Coordinator), located at ……GHLD……, has confirm that the work as mentioned as Section 1.3 is complete.

Signed : …….. Date : ……28/7/06…… Time:……17:00……

The Implementing Safety Coordinator.

3.4 Mr, ……Kennedy……(the Requesting Safety Coordinator), located at ……NLDC…… and I,. ……Khaidir……(the Implementing Safety Coordinator), located at ……GHLD…… agree that This RISP is hereby cancelled.

Signed : …….. Date : ……28/7/06……Time:……17:00……

The Implementing Safety Coordinator.

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THANK YOU

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