添 付 資 料

添付資料－１　セミナー配付資料

1.1　1st Seminar (February 2, 2009)
1.2　2nd Seminar (August 5, 2009)
1.3　3rd Seminar (October 13, 2009)
1.4　4th Seminar (December 8, 2009)
1.5　5th Seminar (January 27, 2010)

添付資料－２　国家安全要件

2.1　国家安全要件（日本語）
2.2　国家安全要件（英語）

添付資料－３　保安規程(日本の例)

添付資料－４　技術責任者に求められる能力要件

添付資料－５　電力設備保安向上のための新しい制度に関するハンドブック

5.1　電力設備保安向上のための新しい制度に関するハンドブック（日本語）
5.2　電力設備保安向上のための新しい制度に関するハンドブック（インドネシア語）

添付資料－１　セミナー配付資料

1.1　1st Seminar (February 2, 2009)

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1.1　1st Seminar (February 2, 2009)

MINISTRY OF ENERGY AND MINERAL RESOURCES
REPUBLIC OF INDONESIA

1st Seminar on "the Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia"

10 February 2009
Sari Pan Pacific Hotel, Jakarta

Japan International Corporation Agency (JICA)
Tokyo Electric Power Company, Inc. (TEPCO)

1st Seminar on
"the Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia"

Agenda

D a t e : February 10, 2009

V e n u e : Sari Pan Pacific Hotel, Istana Ballroom 1

A g e n d a :

8:00	Registration
8:30	Opening Address by Mr. Toru Maeda, Minister for Economic Affairs Development, Embassy of Japan
8:35	Address by Mr. Takashi Sakamoto, Resident Representative, JICA Indonesia Office
8:40	Address by His Excellency Ir. J. Purwano, Director General of Electricity and Energy Utilization Ministry of Energy and Mineral Resources
8:50	Presentation on the Outline of the Study by Mr. Masahiko Nagai, Team Leader of the JICA Study Team
9:30	Presentation on the Current Situation of Technical & Competency Standards by Mr. Arief Indarto, Head of Sub Directorate for Technical Personnel, MEMR
10:00	Q&A
10:20	Coffee Break
10:40	Presentation "Electrical Power Industry and Electrical Safety in Japan" by JICA Study Team (Mr. Yasushi Iida, Mr. Kenichi Kuwahara, Mr. Toshifumi Karasawa)
11:40	Q&A
12:20	Closing Address by Mr. Yoshitaka Saito
12:30	Welcome Lunch

OUTLINE OF
"THE STUDY ON DEVELOPMENT OF TECHNICAL STANDARDS and COMPETENCY STANDARDS IN ELECTRICAL POWER SECTOR IN INDONESIA"

February 10, 2009

JICA STUDY TEAM

Contents

- Background
- Objectives of the Study
- Scope of the Study
- Concept of the Study
- Schedule of the Study
- Field Studies in Indonesia
- The Study Team

Background (1/4)

1. August 2007: Request of Indonesia

- The Government of Indonesia (GOI) officially requested the Government of Japan to extend technical assistance for carrying out the Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia ("the Study")

Background (2/4)

2. August 2008: Discussions between JICA and Indonesian authorities concerned

- JICA Preparatory Study Team was dispatched and had a series of discussions with MEMR and concerned authorities of GOI on "the Study".
- Main points agreed by both parties:
  - The Study is focused on development of technical standards, competency standards and qualification systems for management level personnel in selected fields in electrical power sector.
  - To develop the qualification system for management level, Japanese qualification system will be introduced.
  - After the completion of the Study, MEMR will legislate the standards and systems suggested by the Study with their own initiative.
  - In order to facilitate smooth coordination among relevant organizations, the Steering Committee will be formed for the entire period of the Study

Background (3/4)

3. October 2008: Scope of Work for the Study was signed by MEMR and JICA Indonesia Office

- Based on discussions in August 2008, the Scope of the Work for the Study was signed by MEMR and JICA Indonesia Office.
  - Signer
    - MEMR: Ir. J. Purwono, Director General of Electricity and Energy Utilization, MEMR
    - JICA: Takahi Sakamoto, Chief Representative, Indonesia Office, JICA

Background (4/4)

4. February 2009: Commencement of the Study in Indonesia

- JICA dispatched the Study Team on the Study to Indonesia to carry out 1st Field Study from February 1 to 21, 2009.

Objectives of the Study

To develop
1) Technical standards,
2) Competency standards, and
3) Qualification systems
for management level personnel in selected fields in electrical power sector (generation, transmission and distribution)

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Scope of the Study (1/2)

1. Review of existing technical standards and the condition of Indonesia power supply system, current regulations, technical standards and qualification systems.
   1) to collect and analyze information on specifications and situation of existing power supply facilities.
   2) to evaluate current overall quality of power supply and identify technical problems in power supply systems in terms of technical operation, safety and environment.
   3) to collect and analyze information on technical standards, competency standards and qualification systems in Indonesia.
   4) to collect and analyze information on existing guidelines for competency standards and qualification systems in Indonesia.

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Scope of the Study (2/2)

2. Development of technical standards
   1) to review Japanese cases on technical standards in electrical power sector.
   2) to develop technical standards in selected fields (generation, transmission and distribution)
3. Development of competency standards and qualification systems for management level personnel in selected fields in electrical power sector.
   1) to review Japanese cases on competency standards and qualification systems in electrical power sector.
   2) to develop competency standards for management level personnel in selected fields in electrical power sector.
   3) to develop qualification systems for management level personnel in selected fields in electrical power sector.

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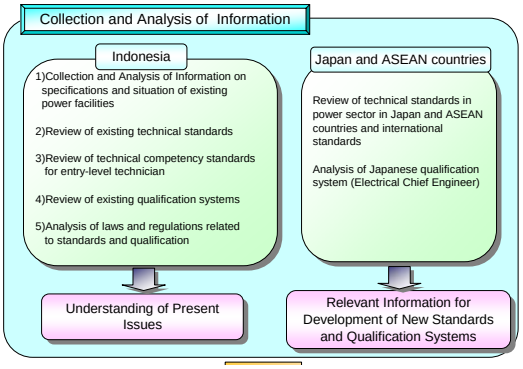
Concept of the Study (1/2)



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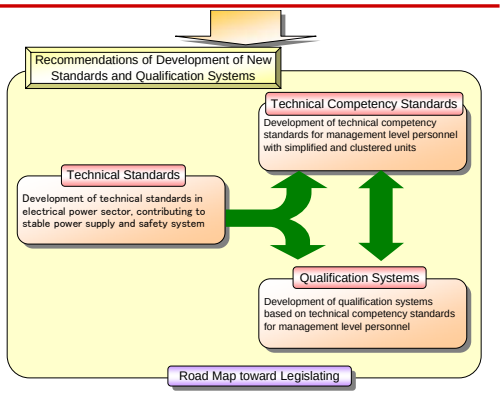
Concept of the Study (2/2)



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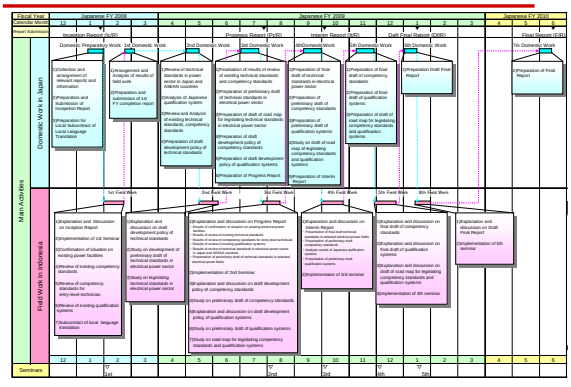
Schedule of the Study



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Field Studies in Indonesia (1/2)

Total Period: January 2009 – June 2010 (18 months)

1. 1st Field Study in Indonesia (early-February to mid-February 2009)
   - Inception report
   - Collection of Information (visiting relevant organizations and existing power facilities)
   - 1st Seminar
2. 2nd Field Study in Indonesia (mid-May to early-June 2009)
   - Collection of Information (visiting relevant organizations
   - Study on technical standards
3. 3rd Field Study in Indonesia (end-July to mid-August 2009)
   - Progress report
   - 2nd Seminar

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Field Studies in Indonesia (2/2)

4. 4th Field Study in Indonesia (early-October to end-October 2009)
   - Interim report
   - 3nd Seminar
5. 5th Field Study in Indonesia (end-November to early-December 2009)
   - 4th Seminar
6. 6th Field Study in Indonesia (mid-January to end-January 2010)
   - Draft final report
   - 5th Seminar

(Final Report :June 2010)

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The Study Team

No	Name	Position	Organization
1	Masahiko NAGAI	Team Leader / Technical Standards & Competency Standards	Tokyo Electric Power Company (TEPCO)
2	Yasushi IIDA	Legal System / Management	- ditto -
3	Toshifumi KARASAWA	Qualification System / Capacity Development	- ditto -
4	Toru SUZUKI	Thermal Power Engineering	- ditto -
5	Keisuke KUMIHASHI	Hydro Power Engineering	TEPCO
6	Kenichi KUWAHARA	Transmission Engineering	Shikoku Electric Power Company (YONDEN)
7	Keisuke YANAGIUCHI	Distribution Engineering A	- ditto -
8	Tatsuya ISHII	Distribution Engineering B	- ditto -
9	Manabu MIURA	Distribution Engineering C	- ditto -
10	Keiichi FUJITANI	Substation Engineering	- ditto -
11	Ran AKAIKE	Project Coordination	- ditto -

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Thank you for your kind cooperation !

The JICA Study Team
On
Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia

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REGULASI KETEKNIKAN

DALAM PENGEMBANGAN SDM SEKTOR KETENAGALISTRIKAN

Oleh :
Ir. Arief Indarto, MM.
Kasubdit Tenaga Teknik Ketenagalistrikan

Disampaikan Pada Acara
"Seminar Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia"

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral
Jakarta, 10 Pebruari 2009

ASPEK PENTING TENAGA LISTRIK

(1) Tenaga Listrik mempunyai peran yang sangat penting dan strategis dalam pembangunan ekonomi nasional
(2) Ketenagalistrikan bersifat padat modal, padat teknologi dan beresiko tinggi
(3) Tenaga Listrik mempunyai resiko membahayakan bagi manusia dan instalasi ketenagalistrikan, sehingga harus memperhatikan keselamatan ketenagalistrikan

KISI-KISI KESELAMATAN KETENAGALISTRIKAN

DASAR HUKUM

UU NO. 15 TAHUN 1985

Pasal 15, ayat (1)

Pemegang Kuasa Usaha Ketenagalistrikan dan Pemegang Izin Usaha Ketenagalistrikan untuk kepentingan umum wajib:
a. menyediakan tenaga listrik;
b. memberikan pelayanan yang sebaik-baiknya kepada masyarakat;
c. memperhatikan keselamatan kerja dan keselamatan umum.

Pasal 17

Syarat-syarat penyediaan, pengusahaan, pemanfaatan, instalasi, dan standardisasi ketenagalistrikan diatur oleh Pemerintah.

Lanjutan...

DASAR HUKUM

Pasal 18

(1) Pemerintah melakukan pembinaan dan pengawasan umum terhadap pekerjaan dan pelaksanaan Usaha Ketenagalistrikan.

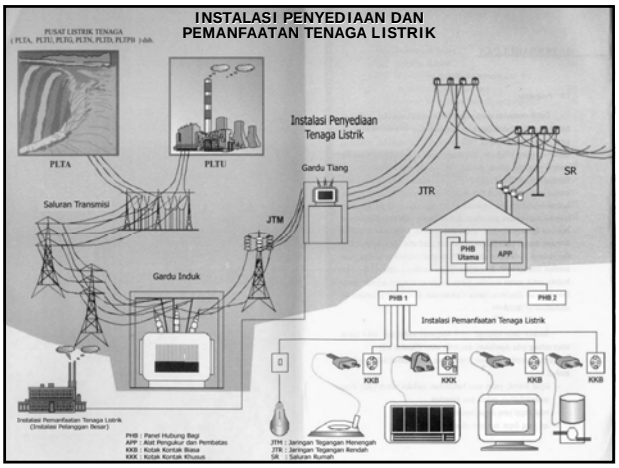
(2) Pembinaan dan pengawasan umum sebagaimana dimaksud dalam ayat (1) terutama meliputi keselamatan kerja, keselamatan umum, pengembangan usaha, dan tercapainya standardisasi dalam bidang ketenaga-listrikan.

Pokok-Pokok Keselamatan Ketenagalistrikan

PP No. 3 Tahun 2005 sebagai perubahan atas PP No. 10 Tahun 1989 tentang Penyediaan dan Pemanfaatan Tenaga Listrik

1. Setiap kegiatan usaha ketenagalistrikan wajib memenuhi ketentuan mengenai keselamatan ketenagalistrikan.
2. Ketentuan tersebut meliputi standardisasi, pengamanan instalasi tenaga listrik dan pengamanan pemanfaat listrik untuk mewujudkan kondisi andal dan aman bagi instalasi dan kondisi aman dari bahaya bagi manusia serta kondisi akrab lingkungan.
3. Setiap instalasi tenaga listrik yang beroperasi wajib memiliki sertifikat laik operasi.
4. Setiap pemanfaat tenaga listrik yang akan diperjual belikan wajib memiliki tanda keselamatan.
5. Setiap tenaga teknik yang bekerja pada usaha ketenagalistrikan wajib memiliki sertifikat kompetensi.

INSTALASI PENYEDIAAN DAN PEMANFAATAN TENAGA LISTRIK



Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

REGULASI KETEKNIKAN SEKTOR KETENAGALISTRIKAN

Peraturan Perundang-undangan
Standar Peralatan dan Pemanfaat Tenaga Listrik
Standar Kompetensi
Kelaikan Instalasi Ketenagalistrikan
Baku Mutu Lingkungan
Tingkat Kandungan Dalam Negeri
Persyaratan Umum Instalasi Listrik (PUIL) 2000
Sanksi-sanksi

Instalasi Tenaga Listrik :
- **Aman**
- **Andal dan**
- **Akrab Lingkungan**

Usaha Penyediaan Tenaga Listrik

Usaha Penunjang Tenaga Listrik

Usaha Jasa Penunjang Tenaga Listrik

Industri Penunjang TenagaListrik

Tenaga Teknik Yang Kompeten

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

STANDARDISASI KOMPETENSI TENAGA TEKNIK DAN ASESOR KETENAGALISTRIKAN

DJLPE DESDM

STANDAR KOMPETENSI

- **LSK**
- **LSA**

SERTIFIKASI KOMPETENSI

AKREDITASI

KAKK

Keterangan :

KAKK : Komisi Akreditasi Kompetensi Ketenagalistrikan;
LSK : Lembaga Sertifikasi Kompetensi;
LSA : Lembaga Sertifikasi Kompetensi Asesor

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

JEJARING STANDARDISASI KOMPETENSI SEKTOR KETENAGALISTRIKAN

DITJEN LPE

KAKK

Kepmen ESDM No. 2052/2001 jo.
Permen ESDM No. 015/2007

- Kepmen ESDM No. 1273/2002 jo. Permen ESDM No. 13/2008
- Kepmen ESDM No. 2311/2008

Pembinaan dan Pengawasan

Akreditasi

STANDAR KOMPETENSI

LSK

LSA

Sertifikasi

Sertifikasi

PELAKU USAHA

TENAGA TEKNIK

LEMBAGA DIKLAT TERAKREDITASI

CALON ASESOR

SERTIFIKAT KOMPETENSI

Kompeten

Belum Kompeten

LULUS

Ya

Tidak

SERTIFIKAT KOMPETENSI

Keterangan:

KAKK : Komisi Akreditasi Kompetensi Ketenagalistrikan; LSK : Lembaga Sertifikasi Kompetensi; LSA : Lembaga Sertifikasi Kompetensi Asesor

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

MILESTONE PENGEMBANGAN STANDAR KOMPETENSI SEKTOR KETENAGALISTRIKAN

(Permen ESDM No. 015 Tahun 2007 Tentang Perubahan atas Keputusan MESDM No. 2052 K/40/MEM/2001 Tentang Standardisasi Kompetensi Tenaga Teknik Ketenagalistrikan)

2001 — **2008** — **2009**

Unit-Unit Standar Kompetensi Level 1, 2, 3 (Level Tenaga Teknik)

Kualifikasi Standar Kompetensi Level 1, 2, 3, 4, 5 (Level Tenaga Teknik dan Level Manajemen)

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

FORMAT STANDAR KOMPETENSI

STANDAR KOMPETENSI
ASESOR KETENAGALISTRIKAN
BIDANG .....
SUB-BIDANG .....

Kode Unit : **Sub Sektor (KTL). Bidang (XY).Kelompok (AB).Unit (CDE). Versi (FG)**
Judul Unit : .....
Deskripsi Unit : .....

Elemen Kompetensi	Kriteria Unjuk Kerja
1.	1.1. .....
	1.2. .....
2.	2.1. .....
	2.2. .....
3.	3.1. .....
	3.2. .....
4.	4.1. .....
	4.2. .....

1. Batasan Variabel
1.1. .....
1.2. .....
2. Panduan Penilaian
2.1. Pengetahuan dan Keterampilan yang dibutuhkan (mengacu pada Kriteria Unjuk Kerja)
2.2. Ruang Lingkup Pengujian
2.3. Aspek Penting
3. Catatan (Note)

Contoh SKP

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

Pemetaan Bidang dan Sub Bidang Standar Kompetensi Tenaga Teknik

No	Bidang	Sub Bidang													
		REN	KON	OPS	HAR	INS	RAN	PRO	MAN	PPM	PJM	PNJ	KOR	PPP	PPMP
1	Pembangkitan			IATKI & HAKIT		HAKIT									
2	Transmisi			GEMA PDKB											
3	Distribusi			IATKI & GEMA PDKB											
4	Instalasi Pemanfaatan TL			HATEKDIS											
5	Industri Pemanfaat TL														
6	Industri Peralatan TL														
7	Pembangkitan EBT														
8	Jasa Diklat (Instruktur – Pembangkit)														

Keterangan :
- **REN** : Perencanaan; - **KON** : Konstruksi; - **OPS** : Operasi; - **HAR** : Pemeliharaan; - **INS** : Inspeksi;
- **RAN** : Perancangan; - **PRO** : Produksi; - **MAN** : Manufaktur; - **PPM** : Pemastian dan Pengendalian Mutu;
- **PJM** : Pengendalian dan Jaminan Mutu; - **PNJ** : Penunjang; - **KOR** : Koordinasi;
- **PPP** : Perawatan, Perbaikan dan Pemasangan; - **PPMP** : Perawatan dan Perbaikan Mesin Produksi

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

Pemetaan Bidang dan Sub Bidang Standar Kompetensi Asesor

No	Bidang	Sub Bidang													
		REN	KON	OPS	HAR	INS	RAN	PRO	MAN	PPM	PJM	PNJ	KOR	PPP	PPMP
1	Pembangkitan														
2	Transmisi														
3	Distribusi														
4	Instalasi Pemanfaatan TL														
5	Industri Pemanfaat TL														
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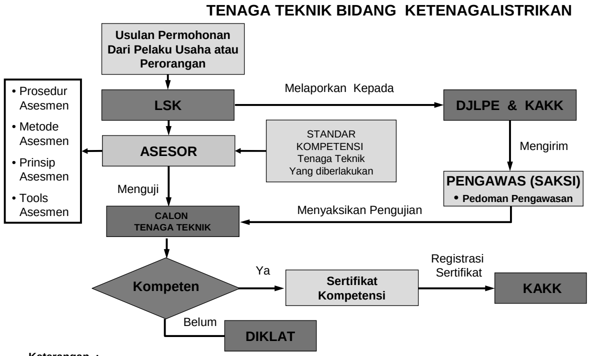
Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

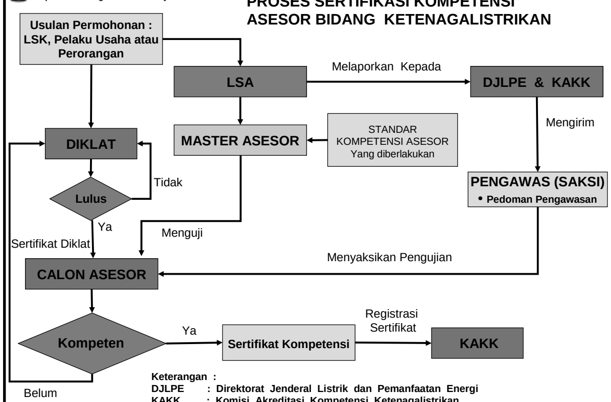
PROSES SERTIFIKASI KOMPETENSI TENAGA TEKNIK BIDANG KETENAGALISTRIKAN



Keterangan :
DJLPE : Direktorat Jenderal Listrik dan Pemanfaatan Energi
KAKK : Komisi Akreditasi Kompetensi Ketenagalistrikan
LSK : Lembaga Sertifikasi Kompetensi
Registrasi : Pencatatan dan penomoran sertifikat kompetensi untuk syarat sahnya sertifikasi

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

PROSES SERTIFIKASI KOMPETENSI ASESOR BIDANG KETENAGALISTRIKAN



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Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

AMPER ALIANSI MASYARAKAT PEDULI **ENERGI RAKYAT**

1.7. Jelang pola-otsorsing........PLN tidak pernah mempersiapkan Pengawas-Trampil disemua sector termasuk konstruksi memiliki kompetensi..................tidak aneh bila jaringan TR amburadul, asal pasang. Jaring TR kabel pilin / twisted-cable bila dikupas isolasinya keluar air akibat pemasangan konektor yang salah.

2. Januari s/d. Nopember 2007 Konsuil Wilayah DKI Jaya & Tgr. telah menerima permohonan : **67.820** berkas, setiap bulannya rata-rata sekitar 6.000 berkas. Masih dibawah target penyambungan baru. Hasil pemeriksaan :

a) Berkas masuk = **67.820** +/- 6.000 / bulan
b) Tidak laik-operasi pada pemeriksaan ke-1 = **35.177** +/- 51,8 %
c) Laik-Operasi pada pemeriksaan ke-1 = **31.330** +/- 44,6 %
d) Kesalahan hanya gambar +/- 3,6 %
YANG TIDAK LAIK OPERASI PADA PEMERIKSAAN KE-1 TERDAPAT PULA KESALAHAN GAMBAR

CATATAN : SETIAP KESALAHAN TELAH DIJELASKAN SECARA DETAIL / TERTULIS OLEH KONSUIL DENGAN SATU TUJUAN.........PEMBELAJARAN / EDUKASI. (terlampir)

3. Dari kondisi sesuai sub-2 tersebut sangat jelas mengindikasikan :

3.1. Tenaga-Trampil / TUKANG-LISTRIK tidak terdidik cara melaksanakan konstruksi yang benar dan memenuhi syarat.
3.2. Pembuat gambar / asbuilt-drawing tidak pernah melakukan opname lokasi setempat, selain tidak trampil menggambar.
3.3. PJT tidak pernah meyakini terlebih dahulu yang terpasang sesuai standar dan sesuai gambar.
3.4. Kesalahan serupa selalu terjadi walaupun rincian kesalahan dari KONSUIL selalu disertakan pada pemberitahuan. Rupanya tidak pernah disampaikan kepada **TUKANG-LISTRIK** yang melaksanakan.........................atau bermunculan terus tukang-listrik avonturir baru.

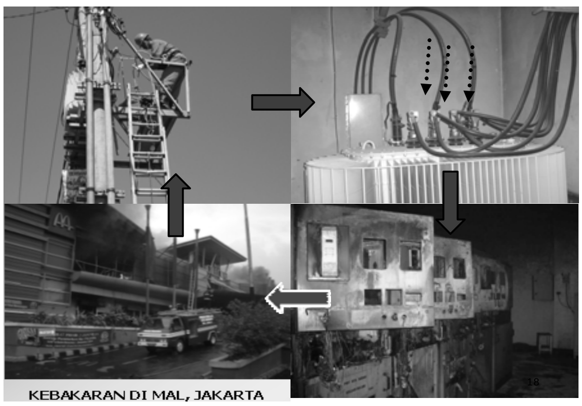
4. Kondisi sub-3 tidak dapat dibiarkan, karena pada akhirnya tetap menciptakan instalasi-listrik yang tidak memenuhi standar demi terwujudnya **JAMINAN KESELAMATAN** bagi masyarakat. Ada beberapa alternative cara penanggulangan :

I. Menghukum para pelaku yang terlibat legalisasi............tanpa kecuali.

II. Menyeleksi kembali PJT dan atau mensyaratkan Jasa-Konstruksi-Listrik / Instalatir wajib memiliki tenaga-trampil "INTI" sebagai karyawan tetap atau berfungsi pengawas.

III. Melakukan pendidikan / training bagi **TUKANG-LISTRIK AVONTURIR** untuk memperoleh **SERTIFIKAT KOMPETENSI**. Dari **TUKANG-LISTRIK** yang telah memiliki sertifikat kompetensi, akan menghasilkan karya instalasi-listrik yang memenuhi standar konstruksi.

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral



PEMBINAAN DAN PENGAWASAN STANDARDISASI KOMPETENSI

- Direktur Jenderal melakukan pengawasan atas penerapan Standar Kompetensi dan pelaksanaan Sertifikasi Kompetensi untuk menjaga tata tertib penyelenggaraan sertifikasi kompetensi yang dilakukan oleh Lembaga Sertifikasi Kompetensi agar tetap memenuhi persyaratan yang ditetapkan
- Pedoman Pengawasan Sertifikasi Kompetensi. (Perdirjen No. 421-12/40/600.3/2007)
- Pedoman Standardisasi Kompetensi, meliputi :
  - Pedoman Standar Kompetensi (Perdirjen No. 420-12/40/600.3/2007)
  - Pedoman Sertifikasi Kompetensi

Direktorat Jenderal Listrik dan Pemanfaatan Energi
Departemen Energi dan Sumber Daya Mineral

Terima Kasih

www.djlpe.esdm.go.id

Electrical Power Industry and Electrical Safety in Japan

東京電力 TEPCO

Contents

Part 1. Outline of Electric Power Industry

Part 2. Indices of Electric Power Industry

Part 3. Safety Regulations by the Electricity Utilities Industry Law

Part 1:

Outline of Electric Power Industry

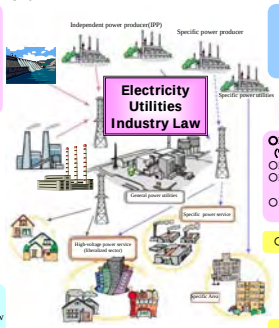
東京電力 TEPCO

1-1. Japanese Electricity Utilities Industry & Its related Laws

Electric Power Development
- Electric Power Development Promotion Law
- Law on the Development of Areas Adjacent to Electric Power Generating Facilities
- Electric Power Development Promotion Tax Low
- Electric Power Development Promoting Special Account Law

Environment
- Basic Environment Law
- Environmental Impact Assessment Law
- Air Pollution Control Law
- Noise Regulation Law
- Vibration Regulation Law
- Water Pollution Control Law
- Law Concerning Special Measures against PCB

Telecommunication
- Telecommunication Business Law
- Wire Telecommunications Law
- Radio Law



Atomic Energy
- Atomic Energy Basic Law
- Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors
- Law for Specified Radioactive Waste Final Disposal

Electrical Safety
- **Electricity Utilities Industry Law (Technical Standards)**
- Electric Work Specialist Law
- Law Concerning the Business Optimization of Electric Works
- Electrical Appliance and Material Safety Law
- Industrial Safety and Health Law
- Fire Service Law
- Measurement Law
- Japanese Industrial Standardization Law

1-2. Objectives of Electricity Utilities Industry Law

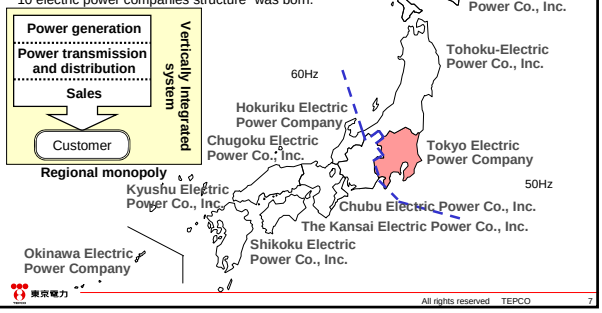
Objectives	Measures
Industry regulations	
○ Protect profits of electricity users	Promote proper and rational operation of electric power industry
○ Promote sound development of electricity enterprises	
Safety regulations	
○ Ensure public safety	Regulate construction, maintenance and operation of electrical facilities
○ Promote environmental preservation	

1-3. Transition of the Electricity Utilities Industry Law

	"Characteristics of the Electricity Utilities Industry Law"	"Background of electric power industry"
1900	Foundation and establishment period (Meiji Era)	
	[1] Safety regulations	•Dawn of electric power industry
	Competition and oligopoly period (Taisho and early Showa Era)	
	[2] Promotion of protection	•Recession after World War I
		•Increase in electric power demand
	State control period	
	[3] State management	•World war
1950	Postwar reorganization period (Mid-Showa Era)	
	[4] Public utilities regulation	•Postwar reconstruction •High economic growth
	10 Electric power companies structure (Late Showa Era)	
	[5] New Electricity Utilities Industry Law	•Oil shock •Nuclear power development
2000	Liberalization of electricity (Heisei Era)	
	[6] Introduction of the principle of competition (Environmental protection)	•Expansion of free trade •International competitiveness

1-4. Ten Electric Power Companies Structure for Consistent Power Generation and Transmission

- **In May 1951, private electric power companies were established in nine regions in Japan, featuring regional monopoly and consistent power generation and transmission.**
- In 1972, Okinawa Electric Power Company was established with the reversion of Okinawa to Japan, then "10 electric power companies structure" was born.



1-5. Enactment of the new Electricity Utilities Industry Law

Taking account of the situation at that time, where the demands were smoothly growing and Utilities' business foundations were developing by a gradual process, the new Electricity Utilities Industry Law has been established in 1964.

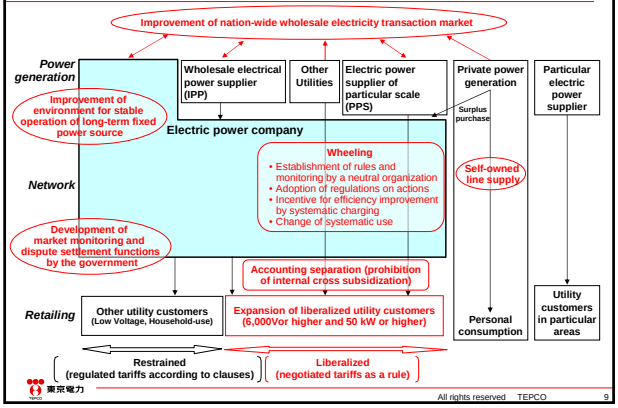
○ 1964

Electricity Utilities Industry Law (put into effect in December 1964)
Article 1: This law is intended to protect the profits of electricity users and promote the sound development of electric power industry by promoting proper and rational operation of electric power industry, and to ensure public safety by regulating construction, maintenance and operation of electricity facilities.
Article 28: Electric power suppliers shall cooperate with each other in development of electrical power resources, supply of electricity, operation of electricity facilities and other operations to contribute to comprehensive and rational development of electricity enterprises through broad-based operation.

(Abstract)

1. **Broad-based operation**
   Reduction of the Business Cost by economical efficiency with Broad-based operation
2. **Improvement of utility customer service**
   Obligation of keeping specified voltage and frequency values, in order to protect customers' benefit
3. **Autonomous security system**
   Obligation of submitting security rules and appointment of qualified electric engineers, to secure the safety of the electrical facilities
4. **Simplification and rationalization of electricity administration**
   Deregulation and Streamlining in Electricity Business

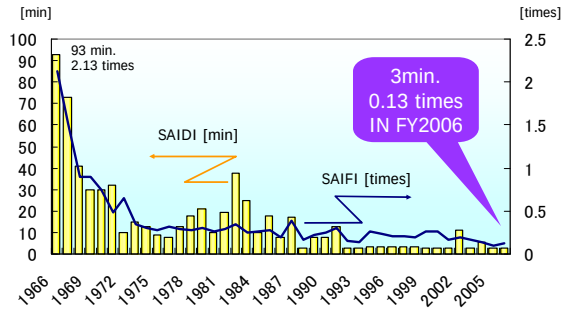
1-6. Electricity Industry System after Liberalization



Part 2:

Indices of Electric Power Industry

2-1. SAIDI & SAIFI

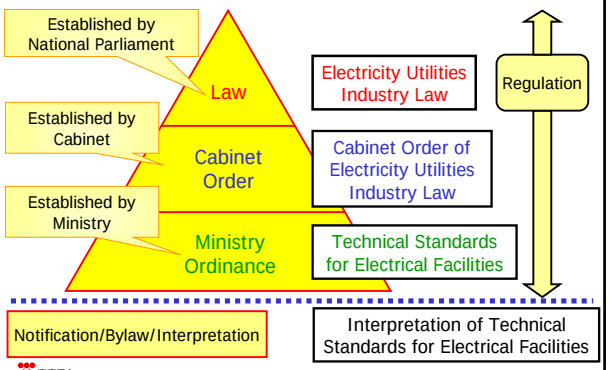


SAIDI & SAIFI in TEPCO

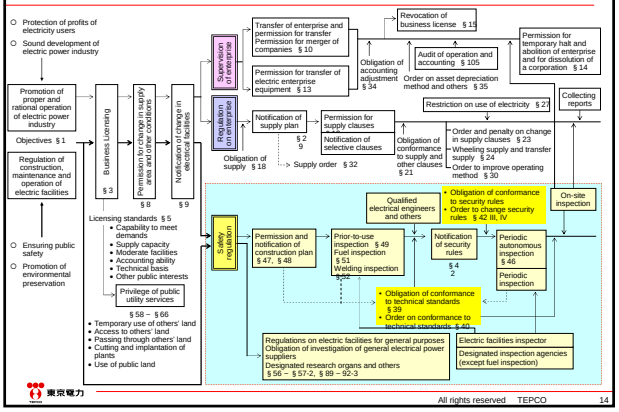
Part 3:

Safety Regulations by the Electricity Utilities Industry Law

3-1. Regulation System regarding Electricity Industry



3-2. System of the Electricity Utilities Industry Law



3-3. Safety Regulation for Electrical Facilities

○ Safety regulations for electrical facilities are mainly specified in the Electricity Utilities Industry Law.

○ The Electricity Utilities Industry Law classifies electrical facilities into "electrical facilities for business use" and "electrical facilities for general purposes" and regulates them separately.

Electrical facilities

Electrical facilities for business use
Electrical facilities other than the electrical facilities for general purposes

Examples: power plants, substations, power transmission lines, power distribution lines and demand equipment of electrical power companies, factories and the like

Electrical facilities for private use
Electrical facilities for business use other than the electrical facilities used for electricity enterprises

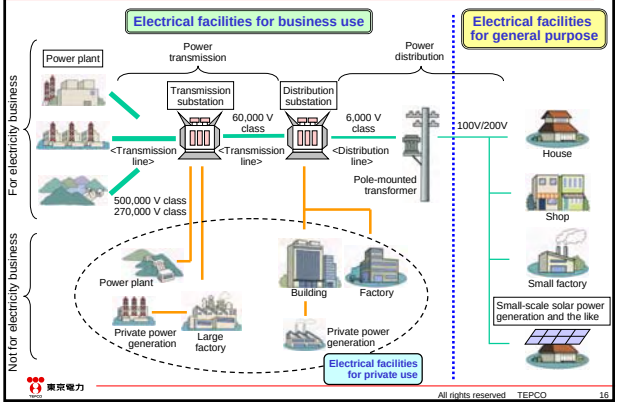
Examples: Demand equipment that receives more than 600 V in power plants, substations, power transmission lines, power distribution lines, factories, buildings and the like

Electrical facilities for general purposes
Electrical facilities that receive 600 V or less and low-output power generation devices* that have an output lower than a certain value and are connected to power receiving lines only and thus have a high degree of safety

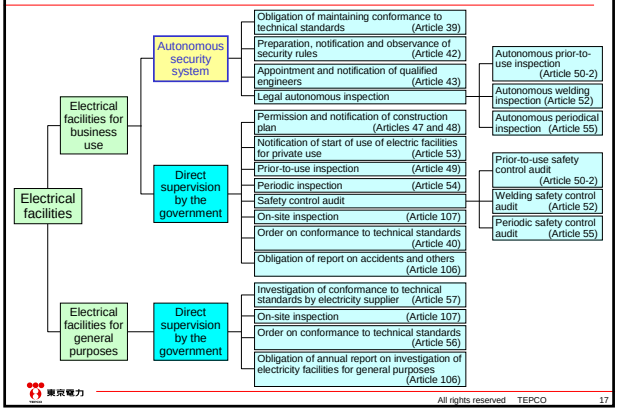
Examples: Domestic wiring in general houses, shops, convenience stores, small-scale offices and the like, and solar power generation devices for general household use

× Low-output power generation devices
(1) Solar power generation devices with an output of 20 kW or lower
(2) Wind power generation devices with an output of 20 kW or lower
(3) Hydraulic power generation devices with an output of 10 kW or lower (except devices involving dams)
(4) Thermal power generation devices driven by internal combustion power with an output of 10 kW or lower unless these devices are installed in the same site and electrically connected, and the total of the outputs of these devices exceeds 20 kW

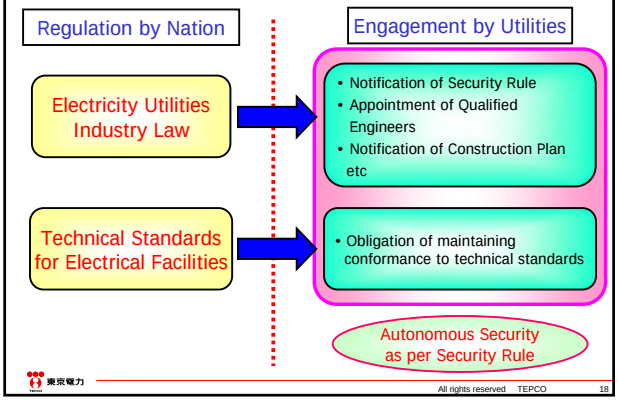
3-4. Electrical Facilities



3-5. Safety System by Electricity Utilities Industry Law



3-6. Electricity Utilities Industry Law & Autonomous Security System



3-7. Security Regulation on Electrical Facilities

	Electrical facilities for business use (over 600V)	Electrical facilities for general purposes (600V and below)
Preparation, notification and observance of security rules	Yes	No
Appointment and notification of qualified engineers	Yes	No
Notification of construction plan	Yes (partly)	No
Autonomous prior-to-use inspection	Yes (partly)	No
Autonomous Welding inspection	Yes (partly)	No
Autonomous Periodical inspection	Yes (partly)	No
Obligation of maintaining conformance to technical standards	Yes	No
Order on conformance to technical standards	Yes	Yes
Investigation of conformance to technical standards by electricity supplier	No	Yes

3-8-(1). Maintenance of Electrical Facilities for Business Use

(Article 39) Maintenance of Electrical Facilities for Business Use

- Those who install electrical facilities for business use shall **keep the facilities conforming to technical standards** specified by the Ministry of Economy, Trade and Industry.

3-8-(2). Maintenance of Electrical Facilities for Business Use

The purposes of this Article are "Electrical Facilities …

1. **Shall do no harm to human body**
2. **Shall not cause damage to property**
3. **Shall not cause electrical or magnetic interference**
   - Inductive interference, radio interference, electrical corrosion interference, magnetic observation interference and others
4. **Shall not cause significant interference with electricity supply from general electrical power suppliers**
   - The general electrical power suppliers are those who are licensed to do electricity supply operations to meet general demands. (10 electrical power companies)

Article 39-2 of the Law

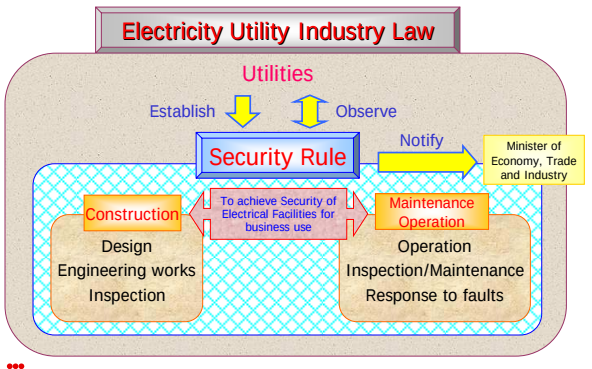
3-9-(1). Security Rules

(Article 42) Notification of Security Rules

- Those who install electrical facilities for business use **shall establish security rules** and notify the Minister of Economy, Trade and Industry of the rules.

Article 42 of the Law,
Article 42-2 to -4 of the Law and
Article 50 of the Enforcement Regulation

3-9-(2). Outline of Security Rules



3-9-(3). An example of Security Rules

An example of TEPCO Security Rules

- TEPCO has two types of Security Rules as per Law:
  - Electrical facilities for electrical enterprises
  - Electrical facilities for private use
- In-house Manuals regarding Security Rules:
  - Office organization and job function rules (Z-10)
  - Operation rules for Security Rules (Z-25)
  - Basic operation manual for Security Rules (AM-7)
  - Basic manual for qualified electrical engineers (AM-4)

3-10. Outline of Security Works

Basic items stated in Security Rules

Preservation during long-term stop (Thermal power plant)

Patrol

Inspection

Examination

Structure for examination

Operation

Handling

Provision for emergency

Record

Storage of records

3-11. TEPCO's structure for Security Management

Obligation of supervision in top-management

President

General Managers in HQ

supervision

Executive obligation for proper security

Heads in branch offices

direction

Managers in front-line workplaces

direction

Employees

direction instruction advice

Obligation of security supervision for Electrical Facilities

Qualified Engineers

3-12. Qualified Engineers

(Article 43)
Appointment of Qualified Engineers

- Qualified Engineers shall be appointed to supervise security for construction, maintenance and operation of electrical facilities for business use.

Article 43 of the Law,
Article 44 of the Law and
Article 52 of the Enforcement Regulation

2-13. Types of Qualified Electrical Engineers

Qualified Engineers

Electrical	Dam / Waterway	Boiler / Turbine
		
Supervising over Security for construction, maintenance and operation of facilities on Generation, Transmission, Distribution, Telecommunication	Supervising over Security for construction, maintenance and operation of Hydro power facilities like Dam, Waterway, Surge tank, Water pressure tube	Supervising over Security for construction, maintenance and operation of Thermal Power Plant, Nuclear Power Plant

3-14-(1). Autonomous Security & Safety Regulation

Engagement of Utilities

Regulation by Nation

Planning / Construction / Operation

Obligation of conformance to technical standards

Autonomous Security Based on Security Rule

Notification of construction plan

- Notification and observance of security rules
- Appointment and notification of qualified electrical engineers

- Autonomous Prior-to-use inspection
- Autonomous Welding inspection

- Prior-to-use Safety Control audit
- Welding Safety Control audit

Start of use

Autonomous Periodical inspection

Periodical Safety Control audit

Patrol, inspection, operation

On-site inspection etc

3-14-(2). Autonomous Security & Safety Regulation

Engagement of Utilities

Regulation by Nation

Operation

Obligation of conformance to technical standards

Autonomous Security Based on Security Rule

Patrol, inspection, operation

Accidents occur

Violation against technical standards

Order on conformance to technical standards

On-site inspection etc

Report of accidents

Penalty

Receive, Direct prevention of recurrence

3-15. Concept of Safety Control Audit System

Before adoption (until 2000)

Government → Electrical Facilities

Direct Inspection by the Government regarding conformance to Technical Standards

After adoption (since 2000)

Utilities → Electrical Facilities

Autonomous Inspection by Utilities regarding conformance to Technical Standards

Government

Governmental Audit to Utilities' Inspection regarding
- Organization
- Ways of Inspection
- Process Management

3-16. Application of Safety Control Audit System per Electrical Facilities

Electrical Facilities	Prior- to-use inspection	Welding inspection	Periodical inspection
Steam power generation	○	○	○
Gas turbine generation	○	○	○
Internal-combustion power Generation	○		
Hydro power generation	○		
Fuel cell	○	○	○
Wind power generation	○		
Solar power generation	○		
Transmission	○		
Distribution			

3-17. Prior-to-use Safety Control Audit

System of prior-to-use inspection

- **Legal** … Inspections as per the Electricity Enterprises Law
  - Distribution: 275 kV or more
  - Thermal power: except internal combustion power stations
  - Hydraulic power: output of 30,000 kW or higher and dam height of 15 m or higher
- **Non-designated by law** … In-house inspections
  - Inspections by qualified engineers
  - Inspections by the departments which manage facilities

Article 55 of the Law,
Article 73-3 of the Enforcement Regulation,
Article 73-5 of the Enforcement Regulation and
Article 73-6 of the Enforcement Regulation

3-18. Welding Safety Control Audit

(Article 52) Autonomous Welding Inspection

- Those who install boilers and turbines involving welding of containers with a pressure of 98 kPa or higher and pipes with a pressure of 980 kPa or higher with outer diameter of 150 mm or larger in thermal power stations and other facilities shall conduct the electrical power supplier's inspection before starting the use of the equipment, and shall keep a record of inspection results.

(Article 52-3) Welding Audit

- Audits done by the accredited organization about the system of autonomous inspection such as organization, ways of inspection, process managements etc.

Article 52 of the Law, Article 52-3 of the Law,
Article 80 of the Enforcement Regulation and
Article 82-2 of the Enforcement Regulation

3-19. Periodical Safety Control Audit

(Article 55) Autonomous Periodical Inspection

- Those who install particular electricity facilities (boilers and turbines for power generation) shall periodically conduct the electrical power supplier's inspection on the electrical facilities, and shall keep a record of inspection results.

(Article 55-4) Periodical Audit

- Audits done by the minister of Economy, Trade and Industry about the system of autonomous inspection such as organization, ways of inspection, process managements etc.

Article 55 of the Law
Article 55-3 of the Law and
Article 94-4 of the Enforcement Regulation

3-20. Incentive in Safety Control Audit System

Item	Before revision	After revision (since July 2000)
Construction plan	Permission of the government	Permission of the government Partly, Notification to the government
Inspection	• Prior-to-use inspection • Welding inspection • Periodic inspection by the government	○ The government's inspection is abolished, and **legal autonomous inspection** is adopted. ○ The government executes **safety control audits**. • The government audits and evaluates the state of execution of legal autonomous inspection • A 3-year incentive is given to a company which is evaluated as "conforming" as a result of the system safety control audit (There is no government intervention in this period.)

Example of system audit

Initial audit → Good grade → Review

There is no governmental audit in the incentive period (3 years).

Legal autonomous inspection (Case A)
Legal autonomous inspection (Case B)
Legal autonomous inspection (Case C)
Legal autonomous inspection (Case D)
Legal autonomous inspection (Case E)

- **Documentary examination (manuals)**
- **On-site examination (Examine the inspection records of cases B, C, D and E)**

3-21. On-site Inspection

(Article 107) On-site Inspection

- Besides Safety Control Audit System, Government still has the strong authority to inspect Electric Power Facilities, whenever they request to do.

Actual examples of On-site Inspection
• Distribution facilities: 4 regional offices /year
• Transmission facilities (including telecommunication equipment): 1 office or station (all equipment)/year
• Hydroelectric power facilities: every 10 years/power station

Article 107 of the Law

TEPCO

Terima kasih

Reference

東京電力 TEPCO

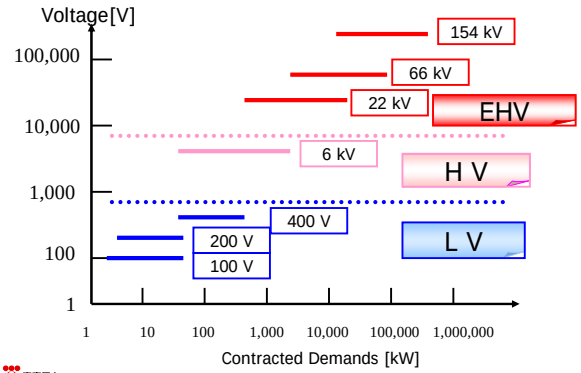
Types of Voltage

(Article 2 in Technical Standards for Electrical Facilities)

Types of Voltage	Voltage	TEPCO's nominal voltages
1. Low Voltage	DC: 750 V & below AC: 600 V & above	100 V, 200 V 400 V
2. High Voltage	DC: above 750 V, 7000 V and below AC: above 600 V, 7000 V and below	6.6 kV
3. Extra High Voltage	above 7000 V	22 kV, 66 kV, 154 kV, 275 kV, 500 kV

* AC is smaller than DC because effective values are indicated [Article 2 of Technical Standards]

Nominal Voltages & Contracted Demands in Japan



Current Situations of Safety Regulation for Electrical Facilities

<Electrical facilities for business use (except those for nuclear power)>

- Installers are obliged to ensure the autonomous security system. For example, preparation and observance of security rules, appointment of licensed engineers, observance of ***technical standards***, and autonomous inspection
- The government performs prior checks and takes measures afterwards as needed. For example, ordering in conformance to ***technical standards***, construction plan, collecting reports, and on-site inspection

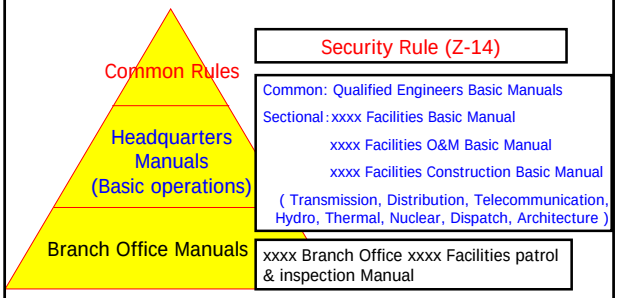
<Electrical facilities for general purposes>

- Owners or occupants are responsible for safety.
- ***Electrical power suppliers*** are obliged to ***conduct investigations.***
- The government takes measures afterwards as needed. For example, order on conformance to ***technical standards*** and on-site inspection

Installers of electrical facilities for business use (except those for nuclear power) are assumed to have sufficient knowledge of electrical safety, and are obliged to secure the autonomous security system by appointment of qualified electrical engineers, preparation and observance of security rules, observance of technical standards, autonomous inspections and other means.

Electrical facilities for general purposes require a different security system from electrical facilities for business purposes. This is because electrical facilities for general purposes are mainly installed in general houses, and generally owned or occupied by those who have little expertise about electrical safety. The responsibility for safety of electrical facilities for general purposes lies with their owners or occupants, while the electrical power suppliers are obliged to conduct investigations to ensure electrical safety in general houses and others.

TEPCO's Security Rule & Related In-house Manuals



Security Rule (Z-14)

Common: Qualified Engineers Basic Manuals

Sectional : xxxx Facilities Basic Manual

xxxx Facilities O&M Basic Manual

xxxx Facilities Construction Basic Manual

(Transmission, Distribution, Telecommunication, Hydro, Thermal, Nuclear, Dispatch, Architecture)

xxxx Branch Office xxxx Facilities patrol & inspection Manual

Prior-to-use Safety Control Audit

(Article 50-2) Autonomous Prior-to-use inspection

- Those who install electric facilities for business use shall conduct an autonomous inspection on the newly-constructed electric facilities, before starting the use of them, and shall keep a record of inspection results.

(Article 50-2-3) Prior-to-use Audit

- Those who install electric facilities for business use shall undergo audits done by the minister of Economy, Trade and Industry about the system of autonomous inspection such as organization, ways of inspection, process managements etc.

Article 50-2-3 of the Law,
Article 73-3 of the Enforcement Regulation,
Article 73-5 of the Enforcement Regulation and
Article 73-6 of the Enforcement Regulation

1.2　2nd Seminar (August 5, 2009)

MINISTRY OF ENERGY AND MINERAL RESOURCES
REPUBLIC OF INDONESIA

2nd Seminar on "the Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia"

05 August 2009
Hotel Bumi Karsa Bidakara Jakarta

Japan International Cooperation Agency (JICA)
Tokyo Electric Power Company, Inc. (TEPCO)

SUSUNAN ACARA SEMINAR KE - 2
"*DEVELOPMENT OF TECHNICAL STANDARDS AND COMPETENCY STANDARDS IN ELECTRICAL POWER SECTOR IN INDONESIA*"

Rabu, 5 Agustus 2009

Waktu	Acara	Pelaksana
09.00 – 09.30	Pendaftaran peserta	Panitia
09.30 – 09.50	Pembukaan : a. Sambutan dari Kedutaan Besar Jepang b. Sambutan dan Pembukaan oleh Direktur Jenderal Listrik dan Pemanfaatan Energi	 Mr. Takehiro TSUCHIYA *(Secretary Embassy of Japan)* Ir. Johnni R.H. Simanjuntak Direktur Teknik dan Lingkungan Ketenagalistrikan, DESDM
09.50 – 10.00	Rehat	Panitia
10.00 – 11.00	Presentasi : *i. Progress of the Study* *ii. Expected Output of the Study* *iii. National Safety Requirements* *iv. Engineering Manager System*	JICA Study Team
11.10 – 11:50	Diskusi	Moderator : Ir. Arief Indarto, MM. Ditjen Listrik dan Pemanfaatan Energi, DESDM
11.50 – 12.00	Penutupan	Mr. Yoshitaka SAITO *JICA Expert on Electric Power an Energy Policy*
12.00 –	Makan Siang	Panitia

The Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia

- Presentation for the 2nd Seminar -

5th August 2009
JICA Study Team

東京電力 TEPCO

Table of Contents

- I. Progress of the Study
- II. Expected Output of the Study
- III. *National Safety Requirements*
- IV. *Engineering Manager* System

I. Progress of the Study

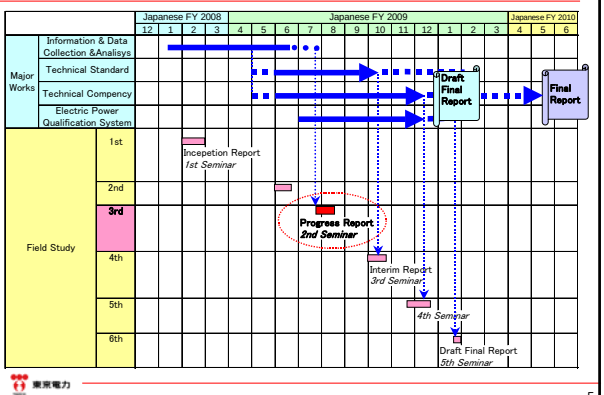
Objectives of the Study

To develop:

1) Technical standards;
   [*National Safety Requirements*]
2) *Engineering Manager* system
   and their Technical Competency;
3) Qualification systems
   for *Engineering Manager*;

in electrical power sector
(generation, transmission and distribution)

3rd Field Study with Overall Workflow



Field Studies in Indonesia (Achievement)

1. 1st Field Study in Indonesia (early-February to mid-February 2009)
   - Inception report
   - Collection of Information
   - 1st Seminar (on February 10, 2009)
2. 2nd Field Study in Indonesia (early-June 2009)
   - Collection of Information (visiting relevant organizations
   - Study on technical standards
3. 3rd Field Study in Indonesia (end-July to mid-August 2009)
   - Progress report (including Preliminary Draft of "National Safety Requirements"
   - 2nd Seminar

Field Studies in Indonesia (Plan)

4. 4th Field Study in Indonesia (early-October to end-October 2009)
   - Interim report (Including preliminary draft of "Engineering Manager System")
   - 3rd Seminar
5. 5th Field Study in Indonesia (end-November to early-December 2009)
   - 4th Seminar
6. 6th Field Study in Indonesia (mid-January to end-January 2010)
   - Draft final report
   - 5th Seminar

(Final Report :June 2010)

The Study Team

No	Name	Position	Organization
1	Masahiko NAGAI	Team Leader / Technical Standards & Competency Standards	Tokyo Electric Power Company (TEPCO)
2	Yasushi IIDA	Legal System / Management	- ditto -
3	Toshifumi KARASAWA	Qualification System / Capacity Development	- ditto -
4	Toru SUZUKI	Thermal Power Engineering	- ditto -
5	Chiyuki JOZAKI	Hydro Power Engineering	TEPCO
6	Kenichi KUWAHARA	Transmission Engineering	YONDEN
7	Keisuke YANAGIUCHI	Distribution Engineering A	TEPCO
8	Tatsuya ISHII	Distribution Engineering B	- ditto -
9	Manabu MIURA	Distribution Engineering C	- ditto -
10	Keiichi FUJITANI	Substation Engineering	- ditto -
11	Ran AKAIKE	Project Coordination	- ditto -

II. Expected Output of the Study

Outline of the Study Team's Proposal

Circumstantial Changes

- Deregulation of power sector [diversified stakeholders]
- Diversification of specifications and standards

[Required Institutional Framework]

- Redefinition of roles of the Government and stakeholders
- National regulation (guidelines)as common platform

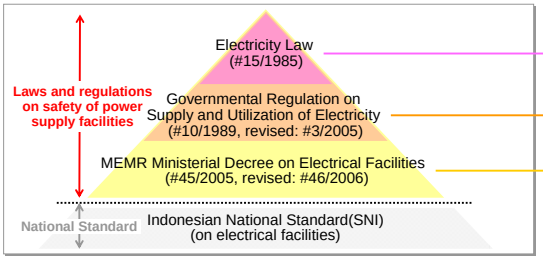
Current Situation

- Laws and regulations
  - Only indicating the reference to SNI and inspection procedures
- National Standard (SNI)
  - Underdeveloped (only covering in-house wiring)
  - Technical specification but no conceptual "common platform"
- Facility inspection
  - No common platform
- Competency standard
  - Not prepared for managers

Study Team's Proposal

- *National Safety Requirements*
  - Common platform of safety that all power utility must comply with
- *Engineering Manager*
  - Discretion in safety management to each power utility
  - Each utility nominates an *Engineering Manger* who is responsible for safety management of facility/-ies
  - *Engineering Manager* develops Safety Rules in compliance with National Safety Requirements

Current Situation: Legal Structure (1)



- General description to oblige observance of safety
- Indicate reference to Ministerial Decrees and standards
  - ✓ Art.21(1): All electricity suppliers are obliged to comply with provisions on electricity safety
  - ✓ Art.22(1): Facilities (for supplying and utilizing electricity) has to follow SNI
- Stipulating procedures of inspecting electricity facilities

Current Situation: Legal Structure (2)

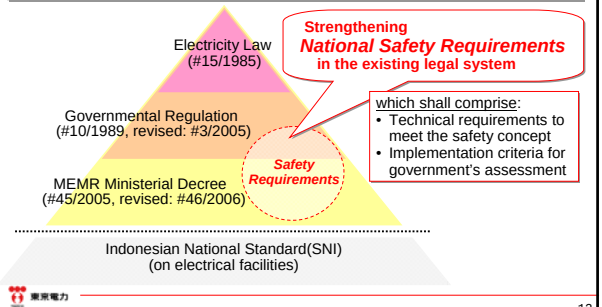
Observations

- No clear relations between Governmental Regulation and Ministerial Decree in terms of how safety in facility installation is secured
- Insufficient description of conceptual layout on safety (unclear definition of "safety" in laws and regulations)
- Insufficient definition of what should be provided in SNI (how SNI should be regulated for securing safety)

- The Government needs to present fundamental concept on "how safety in power supply can be secured" as the precondition of technical specifications and procedures

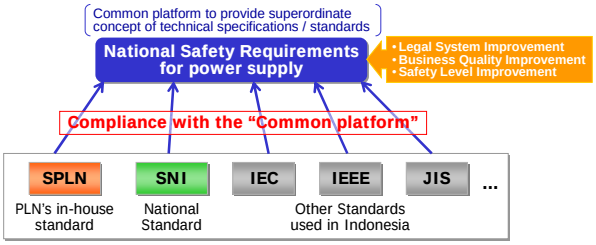
The Study Team's Proposal 1: *National Safety Requirements*

- The Study Team proposes to strengthen *National Safety Requirements* in the existing legal system to serve for securing safety in facility installation/operation/maintenance

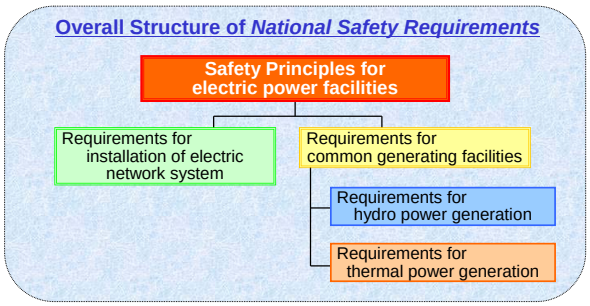


Roles of *National Safety Requirements*

- *National Safety Requirements*, with which any stakeholder in the sector must comply for safety in power supply, needs to be developed as the "common platform" that any power utility needs to conform to regardless of standards



Outline of *National Safety Requirements*

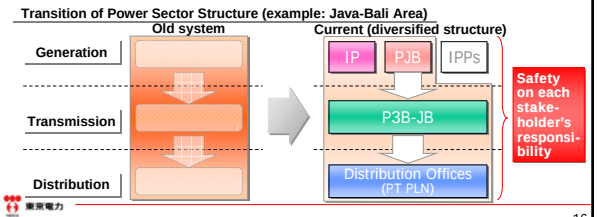


Current Situation: Sector Structure

Deregulation of Power Sector in Indonesia

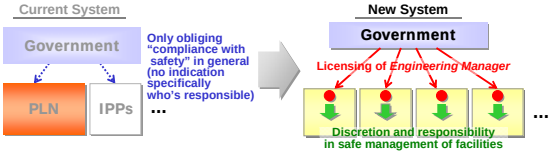
- Transition from old system to current "Diversified structure" with various stakeholders in the sector

- For promoting efficiency, the main objective of deregulation, roles should be clearly separated between the Government and power utilities (stakeholders) so that safety of electricity facilities should be maintained on the responsibility of each stakeholder



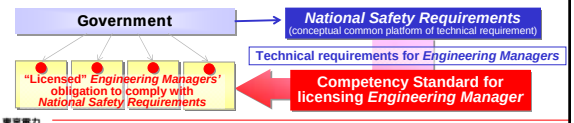
The Study Team's Proposal 2: *Engineering Manager* System

- Considering circumstantial backgrounds of the power sector with diversified players, *the responsibility for safety management* of each assigned electricity facility should be clarified.
- The Study Team proposed *Engineering Manager system* based on Japan's Chief Electrical Engineer system.
- One of the main roles of *Engineering Manager* is doing jobs according to the *National Safety Requirements*.

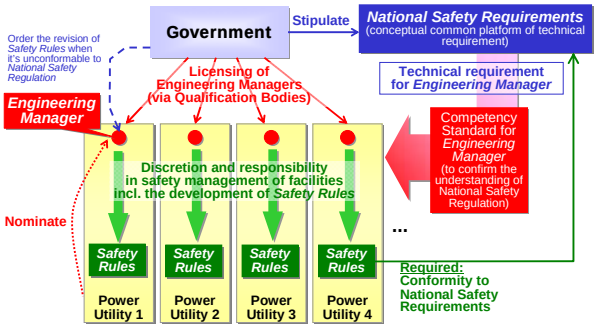


Competency Standard for *Engineering Manager*

- The Government (via Qualification Bodies) provides license to *Engineering Manager*, based on the Competency Standard that is developed for confirming:
  - Their understanding of *National Safety Requirements*, the common platform of technical requirements (to be specified in the next slide);
  - Their ability of developing *Safety Rules* for their own facilities, which must conform to *National Safety Requirements*
- Power utilities that fail to nominate a "licensed" *Engineering Manager* are penalized.
- The nominated *Engineering Manager* whose activities fail to comply with *National Safety Requirements* is also penalized



Overview of the Study Team's Proposal



III. *National Safety Requirements*

Roles of National Safety Requirements (1)

Legal System on Electric Power Industry in Indonesia

Electric Power Utility Law #15 / 1989
- Purpose of Electric Power Industry
- Obligation of Authorized Entities

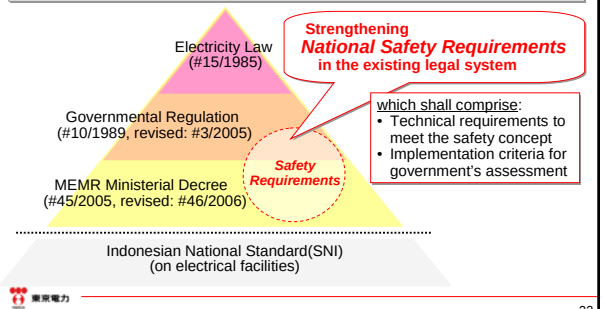
Electric Power Supply & Utilization Governmental Regulation #10 / 1989, #3 / 2005
- Responsibility of Power Utilities
- Request of compliance with safety concept

Electric Facilities Ministerial Decree #45 / 2005, #46 / 2006
- Construction / installation of facilities
- Inspection / test before operation
- Securing safety in the facilities

Issue:
- **No clear relations between Governmental Regulation and Ministerial Decree in terms of how safety in facility installation is secured**
- **Insufficient description of conceptual layout on safety(unclear definition of "safety" in laws and regulations)**
- **Insufficient definition of what should be provided in SNI(how SNI should be regulated for securing safety)**

Roles of National Safety Requirements (2)

- The Study Team proposes to strengthen *National Safety Requirements* in the existing legal system to serve for securing safety in facility installation/operation/maintenance



Roles of National Safety Requirements (3)

Improvement of Legal System for Electric Power Industry

Legal System Improvement | Business Quality Improvement | Safety Level Improvement

JICA Study Team proposes the development of ***National Safety Requirements* (= Technical Requirements)** to satisfy the regulations (Electric Power Utility Law & Ministerial Decree regarding Electric Power Supply & Utilization) in terms of maintaining safety of electric power facilities.

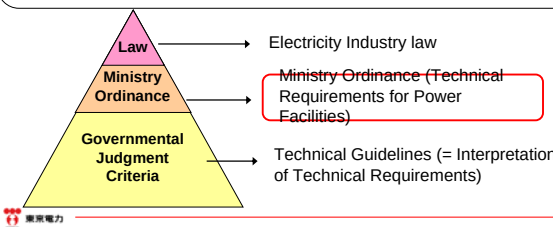
Detailed technical guidelines (installation criteria) is specified in SNI, SPLN, etc.

Japan's Legal System on Electrical Safety (1)

Reference: Technical Requirements for Electric Power Facilities in Japan

- Ministry Ordinance regarding the conceptual technical requirements to install / maintain the safe power facilities are regulated (Legally bound)
- In order to meet the Ministry Ordinance, detailed technical guidelines are established (Legally unbound)

Technical guidelines show examples of how facilities are installed / maintained.



Japan's Legal System on Electrical Safety (2)

Reference: Technical Requirements for Electric Power Facilities in Japan

Electricity Industry Law
- Prevention of physical damage
- Prevention of damage to objects
- Prevention of electric/magnetic interference
- Prevention of power supply hindrance

Ministry Ordinance (Technical Requirements for Power Facilities)

Prevention of electric shock/fire
- Prevent electric shock/fire from power lines
- Prevent electric shock by OH/UG conductor
- Prevent wire breakage
- Grounding of electric facilities
- Prevent unauthorized entry to substations
- Height of overhead power line

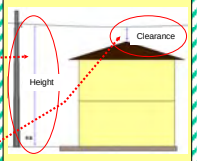
Must be installed not to cause traffic obstruction

Prevent dangers to other wires, objects
- Prevent interference between conductors
- Prevent dangers to other objects by power line

Must be installed without harm, electric shock, fire

Judgment Criteria

Interpretation of Technical Requirement



General stipulations in Electricity Industry Law regarding facility installation / maintenance are further specified in Ministry Ordinance, which describes technical requirements conceptually as the basis for installing / maintaining electric facilities. Judgment criteria is also provided as its implementation guidelines

Japan's Legal System on Electrical Safety (3)

In Japan, law, regulation, order, etc are linked logically

Administrative Agency

Agency can judge without difficulty whether Electric Power Utilities comply with law, regulation, etc.

→ **Security of quality and safety level in the power business**

Electric Power Utilities, New Entrants

Utilities comply with law, regulation, etc. as far as they install power facilities based on the judgment criteria (technical guidelines)

→ **Promotion of Understanding by the new entrants how the facilities are installed**

Outline of *National Safety Requirements* for Indonesia

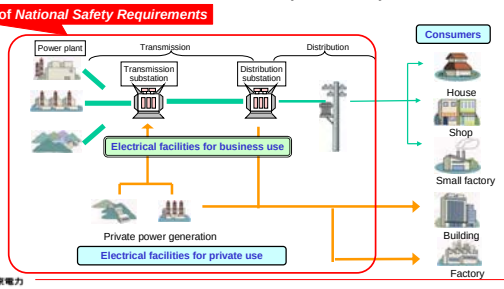
Safety principle for electric power facilities
- Prevention of Electric Shock or Fire at Electric Facilities
- Prevention of abnormal condition
- Prevention of electrostatic or electromagnetic induction
- Prevention of failure of power supply

- **Requirements for installation of electric network system**
  Insulation, Minimum clearance, Prevention of collapse of electric pole etc.
- **Requirements for common generating facilities**
  Installation of Hydrogen-cooled Generators, Mechanical strength of Generators etc.
  - **Requirements for hydro power generation**
    Strength, Materials, Stability and Construction of Levee Body etc.
  - **Requirements for thermal power generation**
    Structure of Steam turbines, Gas turbines, Internal combustion engines etc.

Responsibilities Covered by *National Safety Requirements* (1)

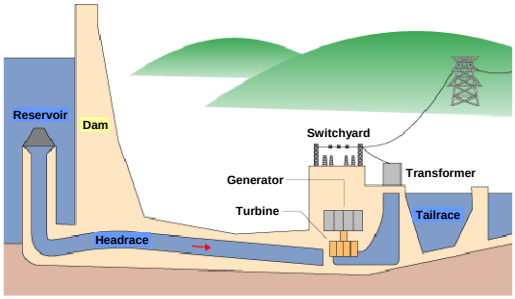
- Transmission and Distribution networks which supply power to customers are regulated by *National Safety Requirements*.
- In-house low voltage wiring as well as self-use of high voltage facilities are NOT regulated by *National Safety Requirements*. And the most of these facilities have already covered by SNI and S-PLN.

Scope of *National Safety Requirements*



Responsibilities Covered by *National Safety Requirements* (2)

General layout of Hydropower plant



Responsibilities Covered by *National Safety Requirements* (3)

General constitution of Hydropower plant

Scope of *National Safety Requirements*

Hydropower Plant

Electric and Mechanical Facilities

Electric Facilities	Common Facilities	Mechanical Facilities
Generator Transformer Switchgear Arrester Power cable etc.	Measuring device Protection device Monitoring & operating device Warning device Emergency power source	Turbine Pump-turbine Inlet valve

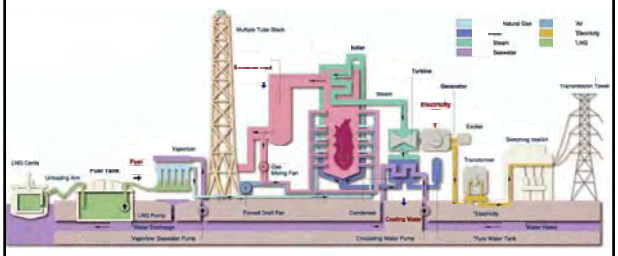
Civil Facilities

Dam
Intake
Settle basin
Headrace
Surge tank
Penstock
Tailrace
Reservoir

Note: Facilities under jurisdiction of PU (e.g. large-size dams) are excluded.

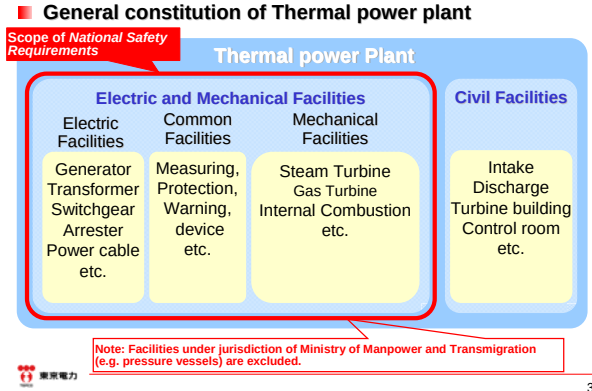
Responsibilities Covered by *National Safety Requirements* (4)

General layout of Thermal power plant



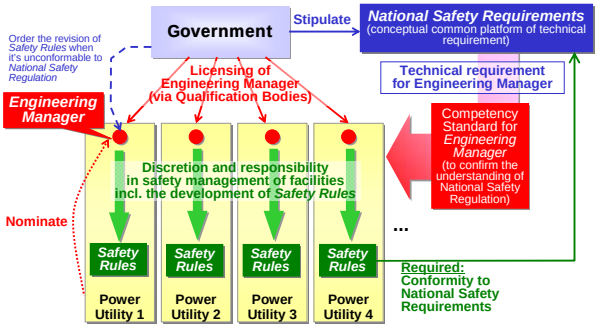
Responsibilities Covered by *National Safety Requirements* (5)

General constitution of Thermal power plant



IV. *Engineering Manager* System

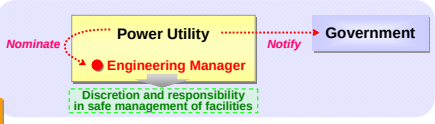
Overview of the Study Team's Proposal



Nomination of *Engineering Manager*

Obligation to Nominate *Engineering Manager*

- To oblige Power Utilities to nominate *Engineering Manager*, who is endowed with strong authority for observing safety, and to notify their nomination or release to the Government.



Objectives

- To prevent and/or minimize electrical casualties and impediments, under high responsibilities of *Engineering Manager*

Roles of *Engineering Manager* (1)

Overall Supervision on Safety Management

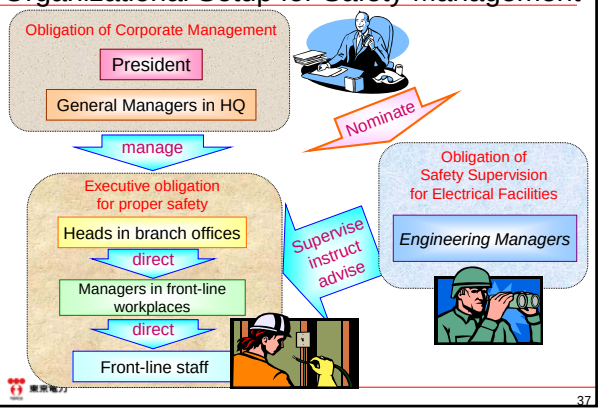
- To supervise comprehensively on the safety of electrical facilities from the following aspects:

✓ **Installation**
  ✧ New construction, Capacity expansion, Conversion, Replacement, Repairing works planning, Designing, Setting-up

✓ **Maintenance**
  ✧ Developing maintenance plan to sustain the current status

✓ **Operation**
  ✧ Monitoring the status of energy input/output, Operation or handling of electrical facilities

Organizational Setup for Safety Management



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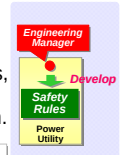
Roles of *Engineering Manager* (2)

Development of *Safety Rules*

- *Engineering Managers* are entitled/obliged to develop *Safety Rules* under their responsibilities, which covers items essential for safety management as per their actual condition.



(1) Duty assignment and organization of Operational Managers
(2) Education to employees about Safety
(3) Patrol, check and inspection regarding Safety
(4) Operation and manipulation of Electrical Facilities
(5) Way of conservation for Power Plants in the case of long-term stop
(6) Provision in the case of casualty or other kind of emergencies
(7) Records in regards to Safety
(8) Necessary items other than abovementioned ones for Safety

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Outline of Safety Rules

Essential Items to be Covered by *Safety Rules*

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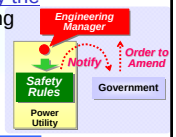
Roles of *Engineering Manager* (3)

Notification of *Safety Rules* to Government

- *Engineering Managers* are obliged to notify the Government of *Safety Rules*, before starting to use Electrical Facilities, or whenever the amendment of *Safety Rules* is made.



Government's Order to Amend *Safety Rules*

- The Government can order *Engineering Manager* to amend *Safety Rules*, when *Safety Rules* are found inappropriate in terms of:
  - –Conformity with *National Safety Requirements*
  - –Compatibility with new technologies (e.g. advanced electrical facilities, maintenance automation)

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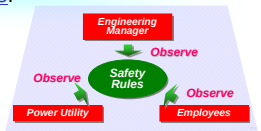
Roles of *Engineering Manager* (4)

Obligation to Observe *Safety Rules*

- *Engineering Managers*, Utilities and their employees are obliged to observe *Safety Rules*.



Penalty, Disqualification

- Power Utilities are subject to penalty in the case violation / deviation from *Safety Rules* is found.
- *Engineering Managers* are also subject to disqualification of licenses, unless they do not observe *Safety Rules*.

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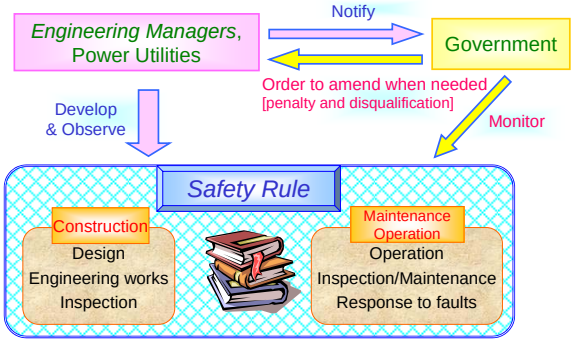
Safety Management under Safety Rules



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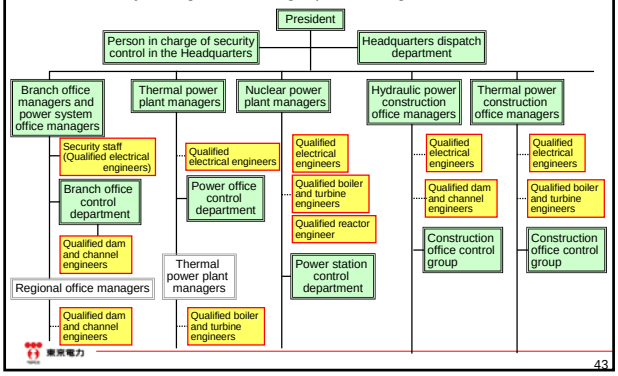
Japan's System (Qualified Electrical Engineers) (1)

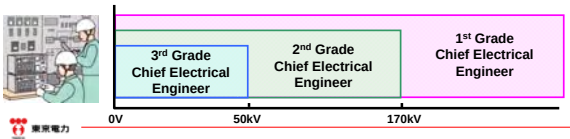
Power utility's obligation to assign qualified engineers in field offices



Japan's System (Qualified Electrical Engineers) (2)

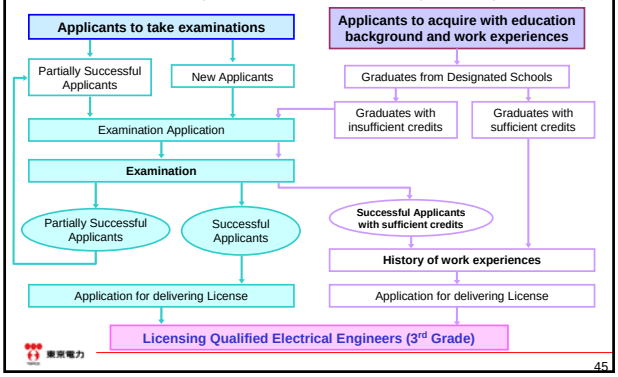
Appointment of "Qualified Electrical Engineers" in Japan

- "Qualified Electrical Engineers" shall be appointed to supervise safety for construction, maintenance and operation of Electrical Facilities for business use as per "Electricity Industry Law".
- Qualified Electrical Engineers consists of 3 Grades that differ in the coverage of responsibilities, which is classified by the voltage they are allowed to deal with.



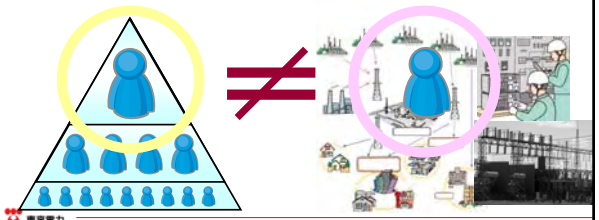
Japan's System (Qualified Electrical Engineers) (3)

- Flow of Licensing Qualified Electrical Engineers (3rd Grade)



Key Issues to be considered

- This JICA Study Team's proposal assumes that *Engineering Managers* are those endowed with exclusive responsibility for supervising on the safety of Electrical Facilities.
- In other words, *Engineering Managers* are ***not*** necessarily identical with General Managers in a corporate entity who are responsible for corporate management in general.



Terima kasih

National Safety Requirements (Draft)

We are waiting for your effective input for further improvement.
Please sent your input to the following E-mail address

E-mail address
dgeeujica@yahoo.com

Terima kasih

有り難うございました。

東京電力

Appendix 1

Regulations in Other Countries

- Regulations in Developed Countries
- Regulations in Other ASEAN Countries

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Regulations in Developed Countries

	Japan	U.S.A.	U.K.	Germany	France	Australia (Victoria)
Electric Power Utility Law	Electricity Industry law	State Administration Code	Electricity act 1989	Energy Economy Act 2005	Administration Code	Electricity Safety Act
Regulation for Technical Requirement for Power Facilities	Regulation for Technical Requirement for Power Facilities	NESC (National Electrical Safety Code)	The Electricity Safety, quality and Continuity Regulations 2002	DIN-VDE	Government and Minister Order	Electricity Safety Regulation
Regulation institution	Ministry (METI)	State Government (IEEE)	Ministry (DTI)	Ministry (DKE)	Ministry (DIDEME)	State Government (ESV)
Technical Guidelines for Power Facilities	Technical Guidelines for Power Facilities	–	Standard of ENA	–	NF	AS
Standard	JIS	ANSI	BS	DIN-VDE	NF	AS
Certification of electric equipment	JIS(PSE)	UL	–	Meister	NF	AS(RCM)

Regulations in Other ASEAN Countries (1)

	Singapore	Cambodia.	Philippine	Vietnam	Laos	India
Electric Power Utility Law	Electricity act	Electricity law	Republic act	Electricity act	Electricity law	Electricity act
Regulation for Technical Requirement for Power Facilities	Transmission Code	Regulation for Technical Requirement for Power Facilities	Philippine Electrical Code	Regulation for Technical Requirement for Power Facilities	Lao Electric power Technical Standard	Indian Electricity Rules
Regulation institution	Energy Market Authority	Ministry	Energy Regulatory Commission	Ministry	Ministry	Central Electricity Regulatory Commission
Technical Guidelines for Power Facilities	–	Technical Guidelines for Power Facilities	–	Guidelines	Technical Guidelines for Power Facilities	–
Standard (Reference)	Singapore Standard (IEC,BS)	– (IEC)	Philippine National Standard (ANSI)	Vietnam Standard (IEC)	– (IEC)	India Standard (IEC,IEEE)
Certification of electric equipment	CAB	–	PS	VS	–	IS

Regulations in Other ASEAN Countries (2)

Countries which does not have National Regulation for Technical Requirements for Power Facilities

	Indonesia	Thailand	Malaysia	Myanmar	Sri Lanka	Bangladesh
Electric Power Utility Law	Electric Power Utility Law	Electricity law	Republic act	Electricity act	Electricity law	Electricity act
Regulation for Technical Requirement for Power Facilities	–	EGAT (Utility's Regulation)	–	–	–	–
Regulation institution	–	EGAT	–	–	–	–
Technical Guidelines for Power Facilities	–	EGAT	–	–	–	–
Standard (Reference)	SNI, SPLN (IEC)	TIS (ANSI)	– (IEC)	– (IEC, BS)	– (IEC, BS, IEEE)	Bangladesh Standard (IEC, BS)
Certification of electric equipment	SNI	TIS	SIRIM	–	–	Bangladesh Standard

Appendix 2

Comparison between Indonesian and Japanese Legal System

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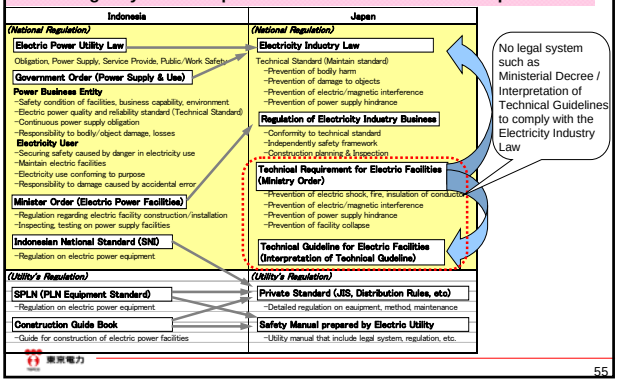
Japan's Legal System on Electrical Safety

Legal System Comparison between Indonesia and Japan



1.3　3rd Seminar (October 13, 2009)

SUSUNAN ACARA SEMINAR KE - 3
"DEVELOPMENT OF TECHNICAL STANDARDS AND COMPETENCY STANDARDS IN ELECTRICAL POWER SECTOR IN INDONESIA"

Selasa, 13 Oktober 2009

Waktu	Acara	Pelaksana
09.00 – 09.30	Pendaftaran peserta	Panitia
09.30 – 09.50	Pembukaan : a. Sambutan dari *Embassy of Japan* b. Sambutan dan Pembukaan oleh Direktur Jenderal Listrik dan Pemanfaatan Energi	 *Mr. Takehiro Tsuchiya (Secretary Embassy of Japan)* Ir. J. Purwono, M.S.E.E
09.50 – 10.00	Rehat	Panitia
10.00 – 11.00	Presentasi : 1. *Progress of the Study* 2. *National Safety Requirements* 3. *Engineering Manager* System and Safety Rules	*JICA Study Team*
11.00 – 11.50	Diskusi	Moderator : Ir. Arief Indarto, MM. Ditjen Listrik dan Pemanfaatan Energi DESDM
11.50 – 12.00	Penutupan	Mr. Yoshitaka SAITO *JICA Expert on Electric Power and Energy Policy*
12.00 – selesai	Makan Siang	Panitia

The Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia

- Presentation for the 3rd Seminar -

13th October 2009
JICA Study Team

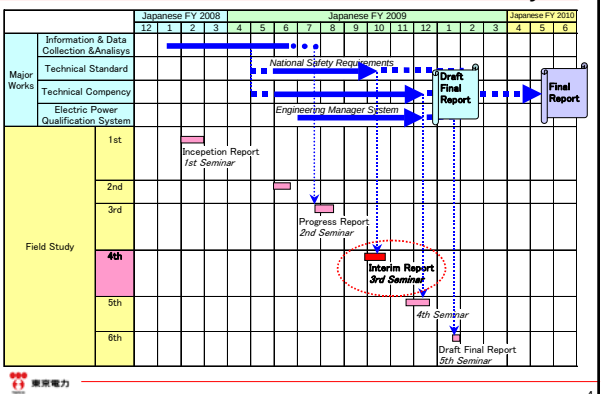
東京電力 TEPCO

Table of Contents

- I. About the 4th Field Study in Indonesia
- II. *National Safety Requirements*
- III. *Engineering Manager* System
- IV. *Safety Rules*

I. About the 4th Field Study in Indonesia

Overall Work Plan and the 4th Field Study



Main Activities in the 4th Field Study

1. Finalization of Draft *National Safety Requirements* [5th week of September - 1st week of October]
2. Discussion on the Tasks and Responsibilities of *Engineering Manager* [2nd-3rd week of October]
3. 3rd Steering Committee [8th October]
4. Workshop on *National Safety Requirements* [9th October]
5. 3rd Seminar of the Study [13th October]
6. Discussion on Legislating *Engineering Manager* System and Required Competency for *Engineering Manager* [2nd-4th week of October]

Outline of the Study Team's Proposal

Circumstantial Changes

- Deregulation of power sector [diversified players]
- Diversification of specifications and standards

[Required Institutional Framework]

- Redefinition of roles of the Government and power utilities
- National regulation (guidelines) as common platform

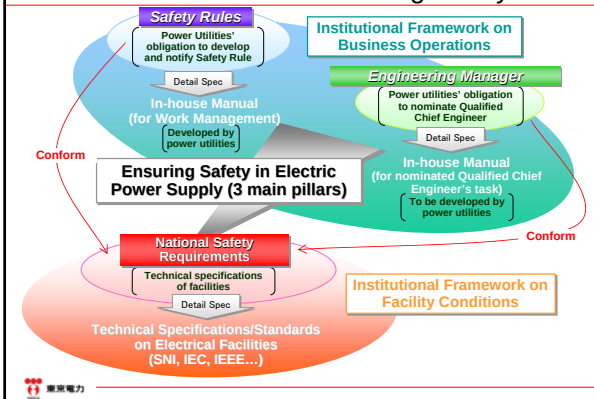
Current Situation

- Laws and regulations
  - No fundamental concept on safety above specifications
- National Standard (SNI)
  - Underdeveloped (only covering in-house wiring)
  - Technical specification but no conceptual "common platform"
- Facility inspection
  - No common platform between inspectors and facility owners
- Competency standard
  - Not prepared for managers

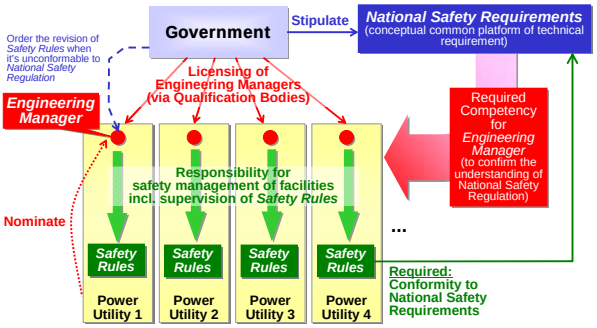
Study Team's Proposal

- *National Safety Requirements*
  - Common platform of safety that all power utility must conform to
- *Engineering Manager*
  - Each utility nominates an *Engineering Manger* who is responsible for safety management of facility/-ies
- *Safety Rules*
  - Outline of power utility's action plan on carrying out operations for securing safety, to be made public

3 Main Pillars for Ensuring Safety



Overview of the Study Team's Proposal



Roadmap for Legislation (tentative thought)

	- Dec 2009	- Jun 2010	- Dec 2010	- Jun 2011	- Dec 2011
Draft specifications of NSR, Engineering Manager system, and Safety Rules	← Study Period				
Legislation of new Governmental Regulations and/or Ministerial Decrees					
Publicity & educational activities					
Development of related guidelines (when needed)					

- The JICA Study Team suggests that the proposed ideas in this Study, such as
  - *National Safety Requirements*;
  - *Engineering Manager* system;
  - *Safety Rules*

  are materialized as a part the new Governmental Regulations and /or Ministerial Decrees to be developed by 23rd September 2010

II. *National Safety Requirements*

Progress of the Study

1st Field Study (Feb.2009)
- Fact-finding study on the current legal system in Indonesia
- Introduction of Japan's legal system regarding technical standards

2nd Field Study (Jun.2009)
- Propose a basic concept of *National Safety Requirements* (*NSR*)
- Start drafting *NSR*

3rd Field Study (Aug.2009)
- Discuss specific stipulations of *NSR*
- Start finalization of draft *NSR*
- Advertise for opinions/comments on draft *NSR* at Seminar and other relevant opportunities

Further Discussion among stakeholders at 4th Field Study

Activities to be done in 4th Field Study

1. Continue discussing with relevant stakeholders to finalize draft *National Safety Requirements* [1st week of October]

2. Workshop on *National Safety Requirements*
   - Date: 9th October (already done)
   - Venue: Gran Meliá Jakarta
   - Participants: Working-level officials in electric power sector

3. Discussion on the Roadmap for Legislation [3rd-4th week of October]
   - Discuss how the NSR will be integrated in the existing/new regulation.

Outline of *National Safety Requirements*

4 principles for safety on electric power facilities
- Prevention of Electric Shock or Fire at Electric Facilities
- Prevention of abnormal condition
- Prevention of electrostatic or electromagnetic induction
- Prevention of failure of power supply

- **Requirements for installation of electric network system**
  Insulation, Minimum clearance, Prevention of collapse of electric pole etc.
- **Requirements for common generating facilities**
  Installation of Hydrogen-cooled Generators, Mechanical strength of Generators etc.
  - **Requirements for hydro power generation**
    Strength, Materials, Stability and Construction of Dam body etc.
  - **Requirements for thermal power generation**
    Structure of Steam turbines, Gas turbines, Internal combustion engines etc.

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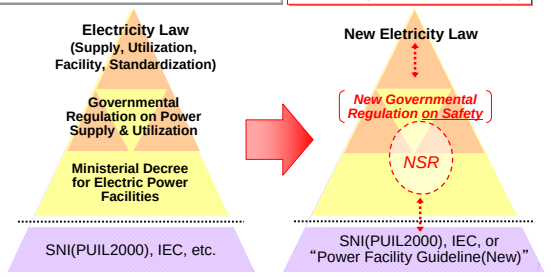
Discussion for Legislation

Current Legal System on Safety | **Future (tentative image)**



- *National Safety Requirements (NSR)* proposed by the JICA Study Team need to be brought into the new "Governmental Regulation on Safety" and/or it subordinate Ministerial Decree

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III. *Engineering Manager* System

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Progress of the Study

1st Field Study (Feb.2009)
- Analyzing current status in Indonesia
  (Competency standards, certification framework, facility inspection)
- Introducing Japan's Chief Electrical Engineer system

2nd Field Study (Jun.2009)
- Proposing *Engineering Manager* system for clearly identifying responsibility for securing safety

3rd Field Study (Aug.2009)
- Agreeing on the development of competency requirements and certification system presuming the implementation of *Engineering Manager* system
- Starting discussion on the tasks and responsibilities of *Engineering Manager* with related stakeholders
  (MEMR Training Centre, P3B, Indonesian Power, JASA Sertifikasi, PLN Training Centre, HAKIT, IATKI etc.)

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Tasks to be done in the 4th Field Study

1. Continue discussing with relevant stakeholders to confirm the tasks and responsibilities of *Engineering Manager*
2. Grasp the status of inspection on electricity supply facilities to identify the issues to be improved
3. Start discussion on the required competency for *Engineering Manager*
4. Present the concept of *Safety Rules* and discuss how to institutionalize *Safety Rules* in Indonesia, especially caring about the relation with the responsibilities of *Engineering Manager* system
   - ✓ *Safety Rules:* overall policy of securing safety in operation and maintenance to be pledged to the public by each public utility
5. Start discussion for legislating *Engineering Manager* system and *Safety Rules*

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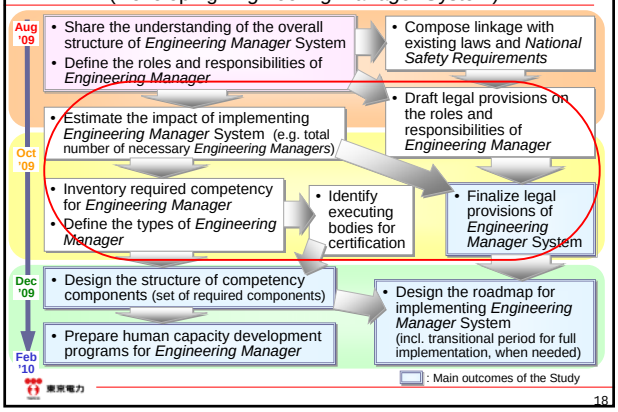
Work Plan of the Study
(Developing *Engineering Manager* System)



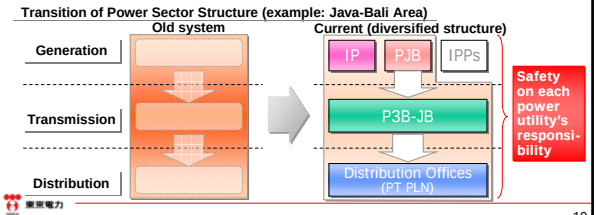
18

Current Situation in Indonesia

Deregulation of Power Sector in Indonesia

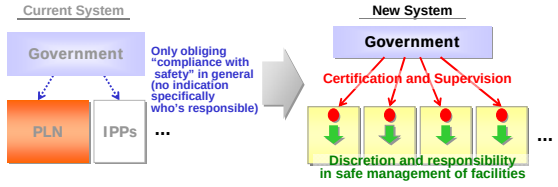
- Transition from old system to current "Diversified structure" with various players in the sector

- For promoting efficiency, the main objective of deregulation, roles should be clearly separated between the Government and public utilities so that safety of electricity facilities should be maintained on the responsibility of each power utility

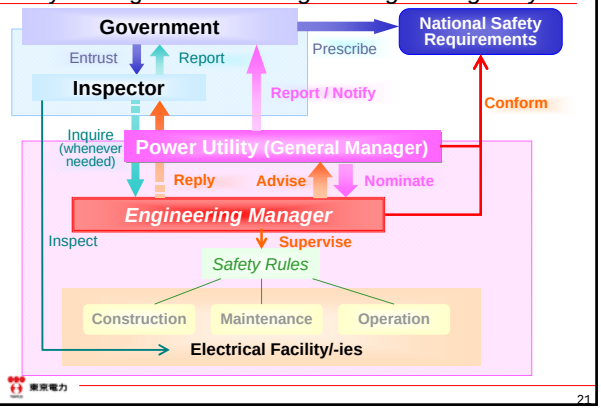


Outline of *Engineering Manager* System

- Considering the diversification of players in the power sector of Indonesia, the responsibility for safety management of each electricity facility should be clarified
- The Study Team proposes *Engineering Manager* system based on Japan's Chief Electrical Engineer system
- *Engineering Manager* is obliged to manage the safety of the electricity facility in conformity to *National Safety Requirements*

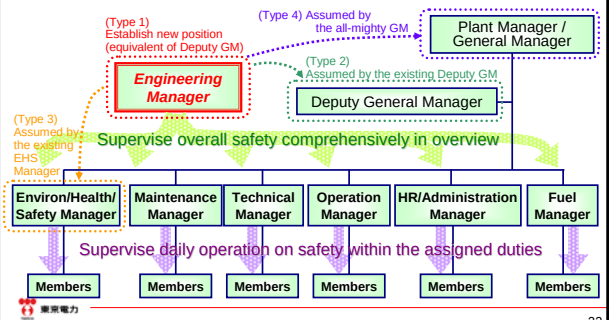


Safety Management with *Engineering Manager* System



Positioning of *Engineering Manager*

- Positioning of *Engineering Manger* in an organization will not be explicitly provided in regulations, and is up to each power utility's discretion taking into account its own organizational structure and staff capacity, such as…



Positioning of *Engineering Manager* (cont'd)

- Though the laws and regulations will not directly intervene into the positioning of *Engineering Manager* in an organization, the Government expects the person who assumes that position to play roles of:
  - Technically advisor to the General Manager, whose main responsibility is administration of the organization, to provide appropriate information from technical aspects;
  - Supervisor/coordinator on safety management for the line managers who are primarily responsible for carrying out the staff's activities with care for safety;

- Naming of *Engineering Manager* in Indonesian regulation is still open for discussion (not yet finally determined)
- Suggestions from Indonesian side is highly appreciated

Main Tasks of *Engineering Manager*

I. Operation

1. Development of annual activity plan on safety management;
2. Supervision for submission of application / notification documents to the authority;
3. Supervision and assessment of safety rules and manuals;
4. Planning and implementation of safety education
5. Attendance to meetings related to safety management
6. Supervision for safety trouble response

II. Construction

1. Supervision of facility construction plan and safety works
2. Assessing the conformity of construction designing to *NSR*
3. Site investigation during construction works;
4. Inspection before commissioning;

III: Maintenance

1. Assessment of the condition of facilities in operation (Site Investigation)
2. Supervision of the revision of site patrol rules
3. Attendance at mandatory onsite inspection carried out by the Inspector
4. Supervision of safety works for repairing

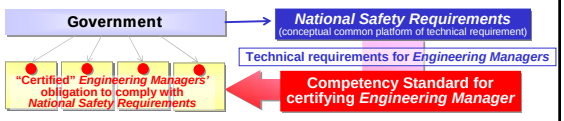
Issues to be Noted

Subjects need to be discussed during this 4th field study

- The organization responsible for construction and O&M are different in Indonesia
  - ✓ Licenses for Construction and O&M should be divided?
- The coverage area for one Engineering Manager in the Organization
  - ✓ Where and how many Engineering Managers should be posted ?
- The appropriate position of Engineering Manager
  - ✓ Duplication & conflict of current assignment of manager
- Entrust safety management to the engineer from out of the companies
  - ✓ If there are NOT any appropriate engineers in the organization.

Competency Standard for *Engineering Manager*

- The Government (via Qualification Bodies) provides certification to *Engineering Manager*, based on the Competency Standard that is developed for confirming:
  - Their understanding of *National Safety Requirements*, the common platform of technical requirements (to be specified in the next slide);
  - Their ability of developing *Safety Rules* for their own facilities, which must conform to *National Safety Requirements*
- Power utilities that fail to nominate a "certified" *Engineering Manager* are penalized.
- The nominated *Engineering Manager* whose activities fail to comply with *National Safety Requirements* is also penalized



Required Competency for *Engineering Manager*

A set of competency required for Engineering Manager

1st Step **Basic Competency**
- Basic theories of electricity
- Understanding of rules for safety
- Enlightenment for safety Issues
- Reporting to regulators/Authorities

2nd Step **Competency For Specific Facilities**

Specific Power Facilities
- Hydro Power Civil
- Hydro Power Mech & Elec
- Thermal Power
- Transmission & Substation
- Distribution

Technical Knowledge
- Electrical Theory
- Automation control

Construction
- Planning & Designing
- Construction Works

Operation
- Operation Management
- Trouble Responses

Maintenance
- Inspection & its Tours
- Repairing Works

Required Competency for *Engineering Manager* (cont'd)

Assessment of certifying/licensing *Engineering Manager* applicants

- *Engineering Manager* should be classified and posted by each facilities as follows.
  - Hydro Power (Civil engineering, Mechanical &Electrical)
  - Thermal Power
  - Transmission & Substation
  - Distribution
- To be *Engineering Manager* there are two steps assessments, first they need to pass "Basic Competency" and only the engineers they passed it can try "Specific Facilities Competency" to obtain that licenses
- Assessments should be made both with "writing exam" and "verbal interview".
- Relevant work experiences and existing competency licences should be considered as a point to be assessed

Executing Bodies for Certification

- Certification services for *Engineering Managers* should be entrusted to existing Certification Bodies; IATKI, GEMA PDKB, HAKIT or HATEKDIS.

Reasons;

1. Principally, DGEEU should implement certification services as the regulatory agency, but it does not have residual resources.
2. On the other hand, existing Certification Bodies have actual performances for certificating NQF level 1 to 3.
3. Also, Certification Bodies have enough experiences to evaluate and hire the scholastic professions or experienced persons in Power Sector as the assessors.
4. So, it is reasonable to utilize the existing bodies' resources for certificating *Engineering Managers.*

Discussion for Legislation

- What should be stipulated in laws and regulations for establishing *Engineering Manager* system will be discussed in detail during the 4th Field Study
  - Public utility's obligation to nominate *Engineering Manager*
  - Certification/Licensing of qualified person as *Engineering Manager*
  - Tasks and responsibilities of *Engineering Manager*
    - ✓ Accountability for the safety management of facility/-ies as the counterpart of the Inspector entrusted by the Government
    - ✓ Supervision of reporting on accidents to the Government
  - Development of *Safety Rules* and notification to the Government
    - ✓ Engineering Manager's responsibility for overall supervision
  - Penalties
    - ✓ Against the *Engineering Manager*
    - ✓ Against the public utility

IV. *Safety Rules*

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Outline of *Safety Rules*

- *Safety Rules* are the operational principles which Power Utilities must follow
- *Safety Rules* are made public as the power utility's pledge to carry out operations in this manner
- Main contents of the *Safety Rules* are as follows

1. Organizational Structures to secure the safety of Electrical Facilities
2. Systematic Chain of Direction / Supervision
3. Assigned Duties of each Departments
4. Measures and Intervals regarding regular Patrol and Investigation

Significance of Publicizing *Safety Rules*

- *Safety Rules* presents in public the tasks to be done by a power utility for ensuring safety of electrical facilities in a general manner (not in detail) and must be submitted to the Government

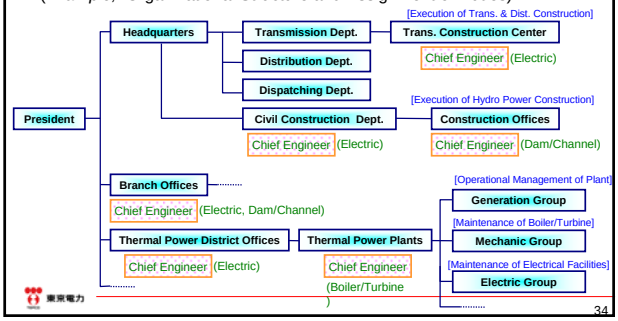
Significances;

1. Submitting *Safety Rules* is equal to declaring that Power Utilities promise to ensure the safety of Electrical Facilities
2. Governing Ministry can order the amendment of *Safety Rules* in case that there are flaws in it for ensuring the safety
3. Detailed in-house manuals are established based on *Safety Rules* by each Power Utilities according to their organizational structures and business operations
4. Power Utilities are motivated if *Safety Rules* must be established at their own discretion

Organizational Structure to Secure Safety (Japan's Case)

- A key point of *Safety Rules* is to clearly define the roles and tasks in an organization for securing safety

(*Example;* Organizational Structure and Assignment of Duties)



Safety Rules (Japan's case)

- In Japanese regulation, each power utility is obliged to develop its own *Safety Rules* that include the following 15 items and to notify to the Government
- Background concept: Securing safety in power utility's autonomy

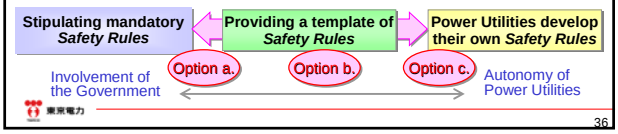
1. Relevant laws and regulations for Safety and managerial setup for observing *Safety Rules*
2. Assigned duties and organizational structures
3. Scope of work of Qualified Chief Engineer, its specifications, his/her authority and position in the organization
4. Educational activities on safety for the staff
5. Measures for systematically implementing and improving safety-related works on power generating facilities
6. Procedures to develop, modify, approve and archive relevant documents for safety on power generating facilities
7. Status of abovementioned documents related to *Safety Rules*
8. Appropriate records on safety
9. Patrol, inspection and investigation for safety
10. Operation and handling of electrical facilities for power utility
11. Procurement of equipment and services for power generating facilities from outside
12. Conservation of power generating facilities that suspend operation for a long period
13. Measures to be taken in disaster or in other kinds of state of emergency
14. Periodical review of *Safety Rules* and necessary amendments
15. Other issues related to safety

Proposal of the Study Team: Three Options

a. Stipulating mandatory *Safety Rules*
Specifications of *Safety Rules* are stipulated as a part of laws/regulations. Power Utilities are obliged to develop their in-house manuals in full-compliance to mandatory *Safety Rules.*

b. Providing a template of *Safety Rules*
The Government provides a template of *Safety Rules* that Power Utilities can refer to when they develop their own *Safety Rules. Safety Rules* need to be submitted to the Government for approval before taking effect.

c. Power Utilities develop their own *Safety Rules*
Specifications of *Safety Rules* provided in laws/regulations are minimized. Power Utilities are requested to develop their *Safety Rules* at their discretion and notify to the Government.



Evaluation of Three Options

a. Stipulating mandatory *Safety Rules*	b. Providing a template of *Safety Rules*	c. Power utilities develop their own *Safety Rules*
- The Government is responsible for preparing the whole contents of *Safety Rules* - Power utilities are obliged to follow literally the provided *Safety Rules*, i.e. their in-house operational manuals must fully conform to *Safety Rules*	- The Government provides a template (=guidelines) - Based on that power utilities prepare and submit *Safety Rules*, which do not take effect unless approved by the Government - Power utilities can propose a variation to the template as far as it has justified reasons	- Power utilities prepare and submit their own *Safety Rules* on their own initiative - *Safety Rules* take effect right upon submission and the Government's intervention is minimized, though minor amendment may be requested occasionally

- Discussion for evaluating these options is still underway, though at the moment the JICA Study Team is in favour of Option b as recommendation

- Providing comments and suggestions from Indonesian side to serve for this discussion is highly appreciated

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Terima Kasih

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Studi untuk Pengembangan Standar Teknis dan Standar Kompetensi Ketenagalistrikan di Indonesia

- Materi Presentasi untuk Seminar ke-3

13 Oktober 2009
JICA Study Team

東京電力 TEPCO

1

Daftar Isi

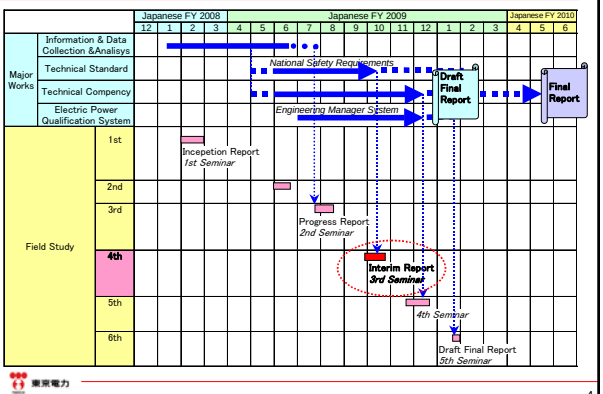
- I. Studi Lapangan ke-4
- II. Persyaratan Keselamatan Nasional (NSR: *National Safety Requirements*)
- III. Sistem Manajer Teknik (EM: *Engineering Manager*)
- IV. Aturan Keselamatan (SR: *Safety Rules*)

2

I. Studi Lapangan Ke-4

3

Rencana Kerja Keseluruhan dan Studi Lapangan Ke-4



4

Kegiatan Utama dalam Studi Lapangan ke-4

1. Finalisasi R-NSR
   [Minggu ke-5 Sep s/d Minggu ke-1 Okt]
2. Diskusi tentang Tugas dan Tanggungjawab EM
   [Minggu ke-2 & ke-3 Okt]
3. Komite Pengarah/Steering Committee ke-3
   [8 Oktober]
4. Workshop tentang NSR
   [9 Oktober]
5. Seminar ke-3
   [13 Oktober]
6. Diskusi tentang penetapan sistem dan kompetensi EM
   [Minggu ke-2 s/d ke-4 Okt]

5

Garis Besar Proposal Tim

Perkembangan kondisi

- Deregulasi sektor TL [diversifikasi pelaku usaha]
- Diversifikasi spesifikasi dan standar

[Kerangka kelembagaan yang diperlukan]

- Redeginisi peranan pemerintah dan utilitas TL (tenaga listrik)
- Aturan Nasional (pedoman) sebagai platform umum

Situasi saat ini

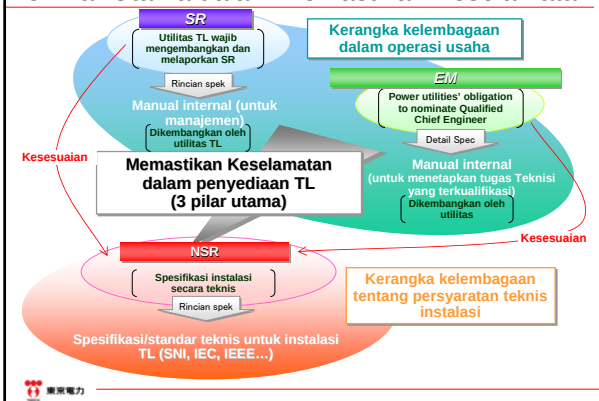
- Perundang-undangan
  - –Tidak ada konsept keselamatan yang memayungi ketentuan spesifikasi
- Standar Nasional(SNI)
  - –Belum berkembang (hanya mencakup pengawatan/pemasangan instalasi)
  - –Ada spesifikasi teknis tetapi tidak ada "platform umum" belum ada
- Inspeksi instalasi
  - –Tidak ada platform antara inspektur dengan pemilik instalasi
- Standar kompetensi
  - –Belum tersedia bagi manajer

Proposal Tim

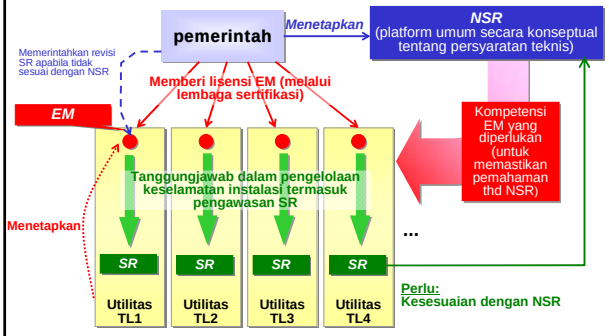
- *NSR*
  - – Plarform umum tentang keselamatan yang harus diikuti utilitas TL
- *EM*
  - – Setiap utilitas menetapkan EM yang bertanggungjawab dalam pengelolaan keselamatan instalasi
- *SR*
  - – Garis besar rencana tindak bagi utilitas dalam melaksanakan operasi untuk keselamatan, yg diumumkan.

6

3 Pilar Utama dalam Memastikan Keselamatan



Garis Besar Proposal Tim



Roadmap menuju penetapan (rencana sementara)

	- Des 2009	Jun 2010	- Des 2010	- Jun 2011	- Des 2011
Rancangan spesifikasi NSR, EM dan SR	← Masa Studi JICA				
Penetapan PP dan/atau Kepmen					
Penguluman dan diseminasi					
Pengembangan pedoman terkait (jika perlu)					

- Tim mengusulkan agar ide kami yang mengcakup
  - *NSR*
  - *EM*
  - *SR*

  dijadikan sebagai bagian dari PP dan/atau Kepmen yang disusun paling lambat 23 Sep 2010

II. *NSR*

Perkembangan

Studi Lapangan ke-1 (Feb.2009)
- Mempelajari kerangka hukum di Indonesia
- Memperkenalkan kerangka hukum yang berkaitan dengan standar teknis

Studi Lapangan ke-2 (Jun.2009)
- Mengusulkan konsep dasar NSR
- Mulai menyusun rancangan NSR

Studi Lapangan ke-3 (Aug.2009)
- Diskusi tentang pasal-pasal NSR
- Mulai finalisasi R-NSR
- Meminta saran dan masukan melalui seminar dan kesempatan lain and other relevant opportunities

Diskusi lebih lanjut dengan stakeholder dalam Studi Lapangan ke-4

Rencana Kegiatan dalam Studi Lapangan ke-4

1. Melanjutkan diskusi dengan stakeholder untuk finalisasi R-NSR
   [Minggu ke-1 Okt]

2. Workshop ttg NSR
   - ➢ Tgl 9 Oktober (selesai)
   - ➢ Di Gran Meliá Jakarta
   - ➢ Peserta: praktisi di sektor TL

3. Diskusi ttg roadmap
   [Minggu ke-3 & ke-4 Okt]
   - ➢ Diskusi bagaimana NSR diintegrasikan dengan aturan yang sudah ada/baru

Garis Besar NSR

4 prinsip dalam keselamatan instalasi TL
- Mencegah sengatan listrik atau kebakaran pada instalasi TL
- Mencegah kondisi luar biasa
- Mencegah induksi elektrostatik atau elektromagnetik
- Mencegah gangguan/kegagalam penyediaan TL

- **Persyaratan untuk instalasi penyaluran**
  Isolasi, jarak bebas, pencegahan kerobohan tiang listrik dll
- **Persyaratan untuk instalasi pembangkitan**
  Instalasi generator yang berpendingin hydrogen, kekuatan mekanis generator dll
  - **Persyaratan untuk PLTA**
    Kekuatan, material, stabilitas dan konstruksi badan bendungan dll
  - **Persyaratan untuk PLTU**
    Struktur turbin uap, turbin gas, mesin pembakaran internal dll

Diskusi tentang legislasi

Kerangka saat ini

UU Ketenagalistrikan
(penyediaan, pemanfaatan, instalasi, standarisasi)

PP
Penyediaan dan Pemanfaatan TL

Permen
Instalasi
Ketenagalistrikan

SNI(PUIL2000), SPLN, IEC, dll.

Ke depan (imej sementara)

UU Ketenagalistrikan yang baru

PP baru
Keselamatan

NSR

SNI(PUIL2000), SPLN, IEC, atau "Pedoman Instalasi TL(baru)"

- NSR yang diusulkan Tim perlu ditetapkan dalam PP dan/atau Permen baru

III. EM

Perkembangan Studi

Studi Lapangan ke-1 (Feb.2009)
- Analisa status Indonesia saat ini
  (standar kompetensi, kerangka sertifikasi, inspeksi)
- Memperkenalkan sistem Manajer TL di Jepang

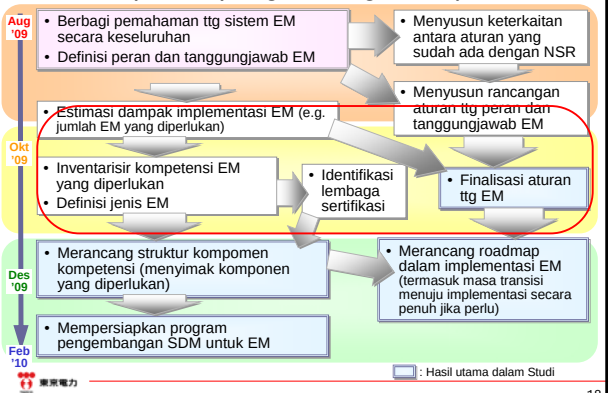
Studi Lapangan ke-2 (Jun.2009)
- Mengusulkan sistem EM dalam rangka identifikasi tanggungjawab dalam keselamatan

Studi Lapangan ke-4 (Aug.2009)
- Sepakat untuk mengembangkan persyaratan ko,petensi dan sistem sertifikasi dalam rangka persiapan implementasi sistem EM
- Mulai diskusi ttg tugas dan tanggungjawab EM dengan stakeholder
  (Pusdiklat DESDM, P3B, IP, JASA Sertifikasi, Pusdiklat PLN, HAKIT, IATKI dll.)

Rencana Kegiatan dalam Studi Lapangan ke-4

1. Melanjutka diskusi dgn stakeholder untuk memastikan tugas dan tanggungjawab EM
2. Mempelajari kondisi inspeksi instalasi penyediaan TL dalam rangka identifikasi permasalahan yang harus diatasi
3. Mulai diskusi ttg kompetensi EM yang diperlukan
4. Memperkenalkan konsep SR dan diskusi bagaimana institutionalisasi SR di Indonesia, khususnya keterkaitan dengan tanggungjawab EM
   - ✓ *SR:* kebijakan secara keseluruhan ttg keselamatan operasi dan pemeliharan yang harus dilaporkan oleh setiap utilitas TL
5. Mulai diskusi ttg penetapan EM dan SR

Rencana Kerja (dalam pengembangan EM)



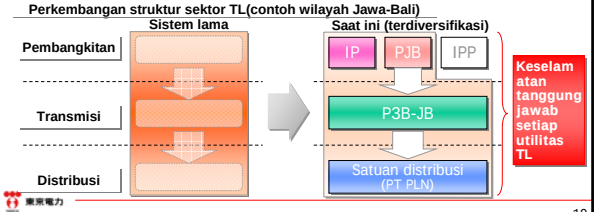
Situasi Indonesia saat ini

Deregulasi sektor TL di Indonesia

- Perkembangan dari sistem lama menjadi sturuktur terdiversifikasi dimana berbagai pelaku usaha berada

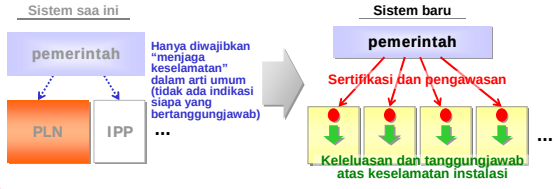
- Tujuan utama deregulasi dalam rangka meningkatkan efisiensi, peran harus dipisahkan antara pemerntah dengan utilitas publik agar keselamatan instalasi TL dapat dipertahankan atas tanggungjawab setiap utilitas TL

Perkembangan struktur sektor TL(contoh wilayah Jawa-Bali)

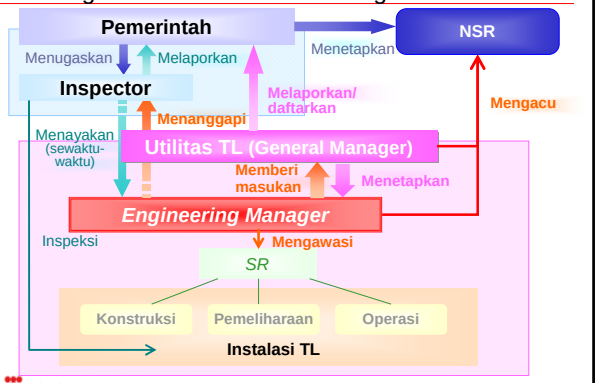


Garis Besar Sistem EM

- Mengingat situasi diversifikasi saat ini di Indonesia, tanggungjawab atas pengelolaan keselamatan bagi setiap instalasi TL harus diklarifikasi
- Tim mengusulkan *Sistem EM* berdasarkan dengan sistem Teknisi di Jepang(Japan's Chief Electrical Engineer system)
- EM wajib mengelola keselamatan instalasi TL dengan memenuhi NSR

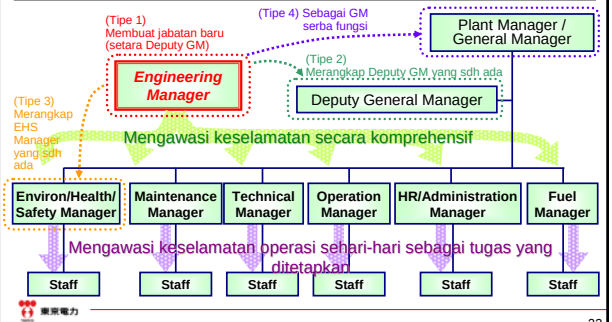


Pengelolaan Keselamatan dengan Sistem EM



Penempatan EM

- Penempatan EM di organisasi tidak diatur secara jelas dalam regulasi, tetapi tergantung pertimbangan setiap utilitas TL berkaitan dengan struktur organisasi dan kemampuan seperti:



Penempatan EM (lanjutan)

- Walaupun penempatan EM tidak diatur secara jelas di regulasi, pemerintah berharap seseorang yang memaiknkan peranan:
  - Penasehat teknis kepada General Manager, dimana tanggungjawab utama adalah memberi informasi yang sesuai
  - Supervisor/coordinator dalam pengelolaan keselamatan bagi manajer terkait yang bertanggungjawab atas kepastian keselamatan yang ditangani oleh bawahannya

- Sebutan EM masih dapat dipertimbangkan/diskusikan(belum ditetapkan)
- Usulan dari pihak Indonesia sangat diharapkan

Tugas Utama EM

I. Operasi

1. Mengembangkan rencana tahunan di bidang pengelolaan keselamatan
2. Mengawasi penyampaian/pelaporan dokumen ke instansi berwenang
3. Mengawasi dan menilai SR dan manualnya
4. Merencanakan dan melaksanakan pendidikan keselamatan
5. Menghadiri rapat yang berkaitan dengan pengelolaan keselamatan
6. Mengawasi tindakan keselamatan terhadap masalah

II. Konstruksi

1. Mengawasi rencana konstruksi instalasi dan pekerjaan yang aman
2. Menilai kesesuaian rancangan konstruksi dengan NSR
3. Investigasi lapangan selama konstruksi
4. Inspeksi prakomisioning

III: Pemeliharaan

1. Menilai kondisi instalasi dalam operasi (investigasi lapangan)
2. Mengawasi revisi aturan apel lapangan
3. Menghadiri inspeksi wajib yang dilakukan oleh Inspektur
4. Mengawasi pekerjaan perbaikan yang aman

Permasalahan yang diperhatiankan

Topik yang perlu dibahas dalam Studi Lapangan ke-4

- Organisasi yang bertanggungjawab di bidang Operasi & Pemelirahan dengan Konstruksi berbeda di Indonesia

✓ Lisensi untuk Konstruksi dan Operasi & Pemeliharaan harus dipisahkan?

- Cakupan bagi seorang EM dalam organisasi

✓ Dimana dan berapa EM yang harus ditempatkan?

- Posisi yang tepat bagi EM

✓ Timpang tindih dan konflik dengan manajer yang sdh ada

- Penunjukkan Teknisi pihak luar

✓ Apabila tidak terdapat teknisi yang sesuai

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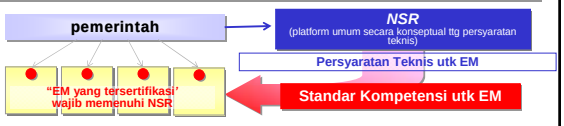
Standar Kompetensi utk EM

- Pemerintah (melalui lembaga sertifikasi)memberi sertifikasi kepada *EM*, berdasarkan dengan standar kompetensi dengan memenuhi syarat:
  - Pemahaman thd *NSR*, platform umum utk persyaratan teknis (rincian lihat slide berikutnya:
  - Kemampuan dalam mengembangkan *SR* bagi instalasinya, yang sesuai dengan *NSR*
- Utilitas TL yang menetapkan *Engineering Manager* yang tidak sesuai dikenai sanksi
- *Engineering Manager* yang ditunjuk yang tidak memenugi *National Safety Requirements* juga dikenai sanksi



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Kompetensi yang diperlukan bagi EM

Perlu serangkaian kompetensi bagi EM

Tahap 1
Kompetensi Dasar

- Basic theories of electricity
- Understanding of rules for safety
- Enlightenment for safety Issue
- Reporting to regulators/Authorities

Tahap 2 Kompetensi untuk instalasi spesifik

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(Lanjutan)

Menilai peserta sertifikasi EM

- *EM* harus diklarifikasi dan dibagi sesuai dengan instalasi
  - PLTA (sipil, mekanik, elektro)
  - PLTU
  - Transmisi & GI
  - Distribusi
- Untuk menjadi EM, terdapat 2 tahap asesmen. Pertama harus lolos "Kompetensi Dasar" dan peserta yang lolos pada tahap pertama yang dapat mencoba "Kompetensi utk Instalasi Spesifik" untuk memperoleh lisensi
- Assesmen harus dilakukan melalui "ujian tertulis" dan "ujian wawancara"
- Pengalaman kerja dan sertifikat kompetensi yang sudah ada harus dipertimbangkan sebagai bobot dalam asesmen.

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Lembaga Sertifikasi

- Jasa Sertifikasi utk EM harus ditugaskan kepada lembaga sertifikasi yang sudah ada seperti: IATKI, GEMA PDKB, HAKIT atau HATEKDIS.

Alasan;

1. Pada prinsipnya, DJLPE harus melaksanakan jasa sertifikasi sebagai regulator, tetapi tidak memiliki sumberdaya
2. Sedangkan lembaga sertifikasi yang sudah ada memiliki kinerja utk melalukan sertifikasi KKNI tingkat 1 s/d 3.
3. Mereka juga memiliki pengalaman yg cukup dalam menilai dan mempekerjakan ahli atau seseorang yang berpengalaman di sektor TL sebagai asesor.
4. Oleh karena itu, lembaga sertifikasi yang sudah ada dapat dimanfaatkan sebagai lembaga sertifikasi untuk EM.

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Diskusi untuk penetapan

- Apa yang harus diatur dalam regulasi dalam rangka membangun sistem EM akan dibahas secara detail dalam Studi Lapangan ke-4
  - Kewajiban utilitas publik untuk menetapkan EM
  - Sertifikasi seseorang yang berkompeten sebagai EM
  - Tugas dan tanggungjawab EM
    - ✓ Pertanggungjawaban thd pengelolaan keselamatan instalasi sebagai mitra/counterpart Inspektur yang ditugaskan oleh pemerintah
    - ✓ Pengawasan dalam pelaporan kejadian ke pemerintah
  - Pengembangan SR dan pelaporan ke pemerintah
    - ✓ Tanggungjawab EM utk pengawasan secara keseluruhan
  - Sanksi
    - ✓ Thd EM
    - ✓ Thd utilitas publik

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IV. SR

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Garis Besar *SR*

- *SR* adalah prinsip dalam operasi yang harus diikuti utilitas TL
- *SR* diumumkan oleh utilitas TL sehingga mereka menjanjikan implementasinya
- Pokok-pokok SR:
  1. Organisasi dalam rangka memastikan keselamatan instalasi TL
  2. Dalam rantai pengarahan/pengawasan secara sistematis
  3. Tugas tiap divisi
  4. Cara dan frekuensi patrol rutin dan investigasi

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Makna keterbukaan SR

- *SR* merupapan apa yang harus dilakukan dalam memastikan keselamatan instalasi TL yang diumumkan secara terbuka (tetapi tidak sampai detail) yang harus dilaporkan ke pemerintah

Makna

1. Melaporkan SR sama dengan mendeklarasi bahwa utilitas TL menjanjikan keselamatan instalasi TL
2. Instansi berwenang dapat memerintahkan revisi SR apabila terdapat ketidaksesuaian dalam rangka memastikan keselamatan
3. Manual operasional internal yang rinci disusun berdasarkan dengan SR oleh setiap utilitas dengan mempertimbangkan struktur organisasi dan status bisnis.
4. Utilitas TL termotivasi dalam mengikuti aturan apabila *SR* dikembangkan dengan keleluasan wewenang sendiri.

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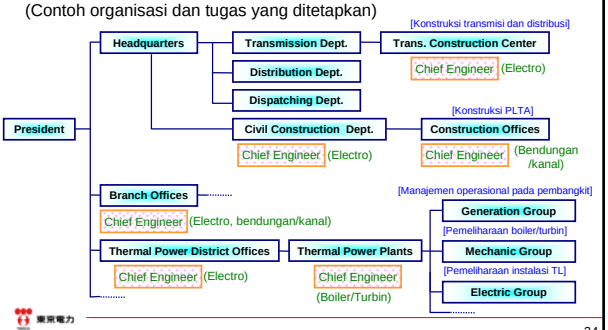
Organisasi dalam rangka memastikan keselamatan (kasus di Jepang)

- Kunci SR adalah definisi peran dan tugas secara jelas dalam organisasi

(Contoh organisasi dan tugas yang ditetapkan)



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SR (kasus di Jepang)

- Dalam regulasi di Jepang, setiap utilitasi TL wajib mengembangkan SRnya termasuk 15 item yang disebut di bawah. SR harus dilaporkan ke pemerintah.
- Dasar pemikiran:Menjaga keselamatan harus dibawah otonomi utilitas TL

1. Sistem untuk mematuhi perundang-undangan di bidang keselamatan dan Aturan Keselamatan
2. Peran dan fungsi petugas dan organisasinya
3. Lingkup tugas dan kewenangan Teknisi Ketenagalistrikan Utama dan kedudukan di organisasinya
4. Diklat keselamatan untuk petugas
5. Tindakan untuk melaksanakan dan memperbaiki pengamanan bangunan untuk pembangkitan secara terencana
6. Tatacara penyusunan, perubahan, persetujuan dan penyimpanan dokumen yang diperlukan dalam pengamanan instalasi ketenagalistrikan untuk pembangkitan
7. Kedudukan dokumen sebagaimana disebut di dalam Aturan Keselamatan
8. Pencatatan pengamanan dengan tepat
9. Pemantauan, pemeriksaan dan inspeksi dalam rangka pengamanan
10. Operasi instalasi ketenagalistrikan ketenagalistrikan
11. Pengadaan dan pengelolaan barang dan jasa yang berkaitan dengan pengamanan instalasi ketenagalistrikan untuk pembangkitan
12. Cara pemeliharaan saat pemadaman pembangkit dalam waktu yang lama
13. TIndakan yang harus diambil saat bencana dan kondisi luar biasa lainnya
14. Pemeriksaan Aturan Keselamatan secara berkala dan penyempurnaannya
15. Hal-hal lain yang diperlukan dalam pengamanan

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Proposal dari Tim: 3 Opsi

a. Pemerintah menetapkan SR sebagai aturan wajib

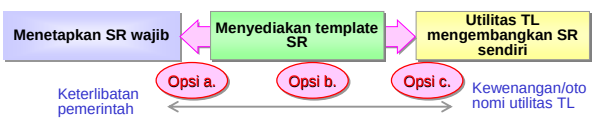
Spesifikasi SR ditetapkab sebagai bagian dari aturan hukum. Utilitas TL wajib mengembangkan manual operasional internal yang sepenuhnya sesuai dengan SR wajib tersebut.wer

b. Pemerintah menyediakan template *SR*

Pemerintah menyediakan template (pedoman) SR agar utilitas TL dapat mengacu dalam pengembangan SR sendiri. *SR* perlu disetujui pemerintah sebelum diberlakukan.

c. Utilitas TL mengembangkan SR sendiri

Mereka hanya diminta agar mengembangkan SR dengan keleluasan mereka sendiri dan dilaporkan ke pemerintah



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Evaluasi 3 opsi

a. Menetapkan SR wajib	b. Menyediakan template SR	c. Utilitas TL mengembangkan SR sendiri
- Pemerintah bertanggungjawab untuk mempersiapkan semua isi *SR* - Utilitas TL wajib mengikuti SR. Manual internal hrs sesuai dengan SR.	- Pemerintah menyediakan template (=pedoman) - Berdasarkan dengan pedoman, utilitas TL mempersiapkan dan menyampaikan SR, yang baru berlaku setelah persetujuan pemerintah - Utilitas TL dapat mengusulkan variasi dari template sepanjang alasan yang dapat diterima	- Utilitas TL mengembangan SR dengan keleluasan sendiri dan melaporkan ke pemerintah - *SR* berlaku setelah penyampaikan ke pemerintah. Intervensi pemeirntah diminimalisir namum revisi minor dapat diminta.

- Diskusi ttg evaluasi 3 opsi masih berlangsung, namun saat ini Tim menyukai opsi b sebagai rekomendasi.

- Saran dan masukan dari pihak Indonesia sangat diharapkan.

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Terima Kasih

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1.4　4th Seminar (December 8, 2009)

SUSUNAN ACARA SEMINAR KE - 4
"DEVELOPMENT OF TECHNICAL STANDARDS AND COMPETENCY STANDARDS IN ELECTRICAL POWER SECTOR IN INDONESIA"

Selasa, 8 Desember 2009

Waktu	Acara	Pelaksana
09.00 – 09.30	Pendaftaran peserta	Panitia
09.30 – 09.50	Pembukaan : a. Sambutan dari JICA Indonesia Office b. Sambutan dan Pembukaan oleh Direktur Jenderal Listrik dan Pemanfaatan Energi	 Mr. Hiroyuki KAWANISHI Senior Representative *JICA Inodonesia Office* Ir. J. Purwono, M.S.E.E
09. 50 – 10. 00	Coffee break	Panitia
10. 00 – 11.50	Presentasi & QA : *1. About the 5th Field Study in Indonesia* *2. Overview of the JICA Study Team's Proposal* *3. National Safety Requirements* *4. Safety Rules* *5. Engineering Manager System* 6. *Technical Competency for Engineering Manager*	 *JICA Study Team* Moderator : Ir. Arief Indarto, MM. Ditjen Listrik dan Pemanfaatan Energi DESDM
11.50 – 12.00	Penutupan	Mr. Yoshitaka SAITO *JICA Expert on Electric Power and Energy Policy*
12.00 – selesai	Makan Siang	Panitia

The Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia

- Presentation for the 4th Seminar -

8th December 2009
JICA Study Team

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Table of Contents

I. About the 5th Field Study in Indonesia

II. Overview of the JICA Study Team's Proposal

III. *National Safety Requirements*

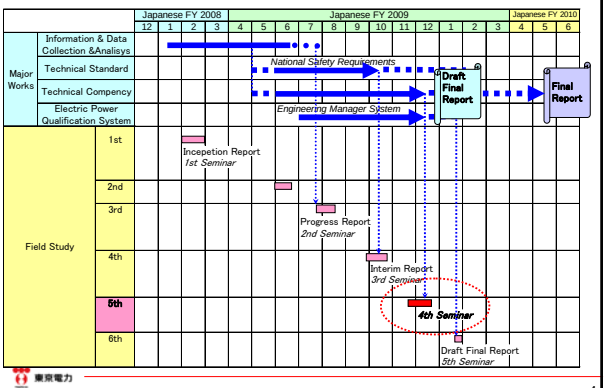
IV. *Safety Rules*

V. *Engineering Manager* System

VI. Technical Competency for *Engineering Manager*

I. About the 5th Field Study in Indonesia

Overall Work Plan and the 5th Field Study



Main Activities in the 5th Field Study

1. Discussion on Institutionalizing the Study Team's Proposal [3rd week of November - 3rd week of December] ***Ongoing***
2. Discussion on the Practices of Facility Inspection [3rd week of November - 1st week of December] ***Completed***
3. Site Survey on Electrical Safety Management in Outer-Java-Bali Area [4th week of November] ***Completed***
4. 2nd Workshop on Discussing Technical Competency of *Engineering Manager* [1st December] ***Completed***
5. 4th Steering Committee [4th December] ***Completed***
6. 4th Seminar of the Study [8th December]

II. Overview of the JICA Study Team's Proposal

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The JICA Study Team's Proposal

- The JICA Study Team has so far proposed 3 main pillars for securing safety based on the experience in Japan, i.e. *National Safety Requirements*, *Safety Rules*, and *Engineering Manager* system;

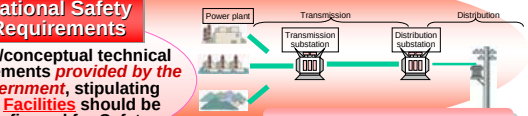
- The JICA Study Team expects that these proposals are taken into account in developing new Regulations and Decrees

National Safety Requirements	: Conceptual common platform of technical requirements for securing safety of electrical facilities	Institutional Framework for Securing Safety
Safety Rules	: Operational principles that each Power Utility must comply with	
Engineering Manager	: Nomination of a qualified person who supervises the overall safety	
	: Improving technical competency of engineers through certification	Capacity Development

3 Main Pillars for Ensuring Safety

National Safety Requirements

Basic/conceptual technical requirements *provided by the Government*, stipulating how Facilities should be configured for Safety



Electrical Power Facilities

Safety Rules

Rules *developed by each Utility/entity*, stipulating How *Utility/entity* should construct, operate and Maintain Facilities in conformity to *NSR*

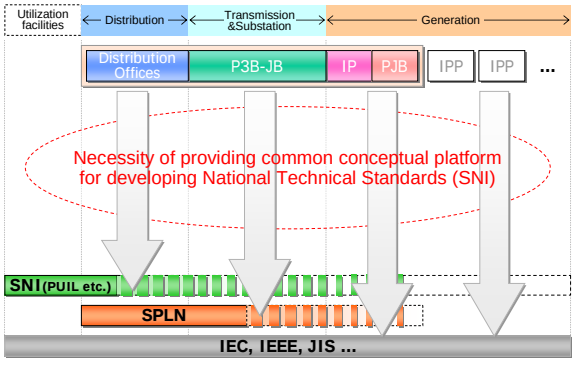
Engineering Manager

Engineering Manager *nominated by each Utility/entity*, responsible for supervising the overall safety of electrical facility in line with *Safety Rules*

Utilities/Entities

III. National Safety Requirements

Current Situation in Indonesia (Java-Bali's case)

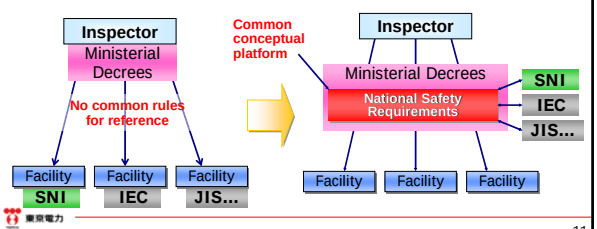


Current Situation in Indonesia (Cont'd)

Facility Inspection

- A common standard has not been unified which inspectors and facility owners should refer to (Only inspection items are stipulated in Ministerial Decree #45/2005)

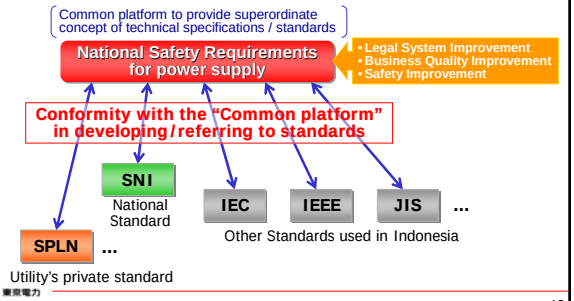
→ Inspectors and facility owners need to have common platform of a unified standard



The JICA Study Team's proposal

National Safety Requirements

- *National Safety Requirements*, with which any stakeholder in the sector must conform for safety in power supply, needs to be developed as the "common platform"



Outline of *National Safety Requirements*

Safety principle for electric power facilities
- Prevention of electric shock or fire at electric facilities
- Prevention of abnormal condition
- Prevention of electrostatic or electromagnetic induction
- Prevention of failure of power supply

- **Requirements for installation of electric network system**
  Insulation, Minimum clearance, Prevention of collapse of electric pole etc.
- **Requirements for common generating facilities**
  Installation of Hydrogen-cooled Generators, Mechanical strength of Generators etc.
  - **Requirements for hydro power generation**
    Strength, Materials, Stability and Construction of Levee Body etc.
  - **Requirements for thermal power generation**
    Structure of Steam turbines, Gas turbines, Internal combustion engines etc.

Recommended Action Plan (*National Safety Requirements*)

- Legislation for institutionalizing *National Safety Requirements* and promotion for full adoption
- Because *National Safety Requirements* basically do not provide numerical criteria, MEMR is suggested to consider developing guidelines to supplement *NSR*, such as:
  - Linkage of stipulations between *NSR* and SNI (PUIL) [or other existing technical standards]
- Completion of SNI (PUIL) to cover all the areas of electrical facilities is also strongly recommended

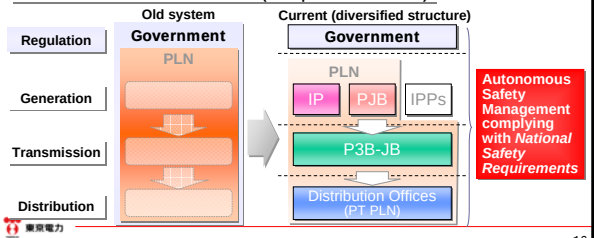
IV. Safety Rules

Current Situation in Indonesia

Deregulation of Power Sector in Indonesia
- Transition to "Diversified structure" with various players

- Roles and responsibilities of the Government and utilities should be clearly defined so that the safety of electrical facilities is maintained in compliance with *NSR* autonomously

Transition of Power Sector Structure (example: Java-Bali Area)

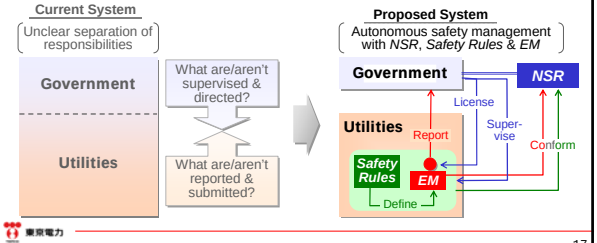


The JICA Study Team's proposal

Safety Rules and *Engineering Manager*

- Based on the observation from the current status, the JICA Study Team proposes the introduction of the following systems:
  - Safety Rules [operational principles of each power utility]
  - Engineering Manager [responsible person to supervise safety]

  to ensure autonomous safety management in conformity to *National Safety Requirements* in a visible way



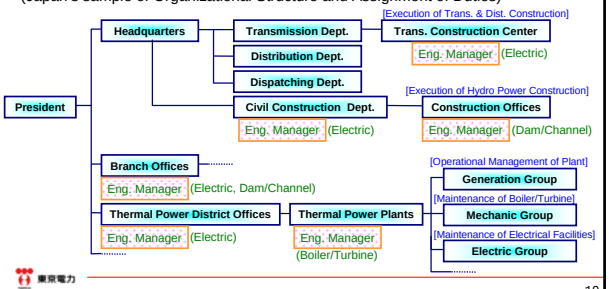
Outline of *Safety Rules*

- *Safety Rules* are the operational principles prepared by each power utility and submitted to the Government as the power utility's pledge to carry out operations in this manner
- *Safety Rules* consist of the following two main rules:
  1. Organizational structures to secure the safety of electrical facilities, including the positioning of *Engineering Managers* and assignment of duties
  2. Basic rules of construction/operation/maintenance procedure
     - Regular patrol and facility inspection (interval and approaches)
     - Measures to deal with accidents/troubles
- The Government can order the amendment of *Safety Rules* in case the descriptions are insufficient for ensuring safety
- Detailed private manuals of each power utility are established in conformity to *Safety Rules*

Organizational Structure to Secure Safety

- A key point of *Safety Rules* is to clearly define the roles and tasks in an organization for securing safety, especially the positioning of *Engineering Manager*

(Japan's sample of Organizational Structure and Assignment of Duties)



Basic Rules of O&M Procedure

- Another key point of *Safety Rules* is to clearly define the basic rules of operation & maintenance procedure for securing safety, including measures to deal with accidents/troubles
  [More Details are provided in the power utility's private operational manuals]

(Japan's Case of Regular Patrol and Facility Inspection: sample)

Facility	equipment	Patrol	Inspection	
		Period	Item	Period
Hydropower	Dam, Reservoir, Waterways	Once / Month	Exterior Inspection	Once / year
			Interior Inspection	Once / 3years
	Turbine, Generator	Twice / Month	Exterior Inspection	Once / 3years
			Overhaul	Ad hoc

Safety Rules
- Operation Manual
- Patrol Manual
- Inspection Manual

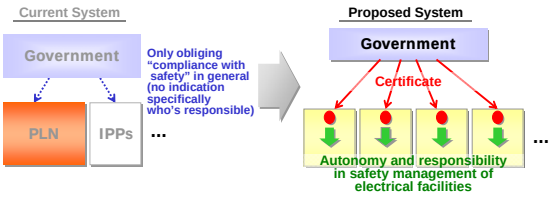
Recommended Action Plan (*Safety Rules*)

- Legislation for institutionalizing *Safety Rules* and promotion for full adoption
- MEMR is suggested to consider developing guidelines to assist power utilities in preparing *Safety Rules* on their own
- Gradual adoption of *Safety Rules* by prioritizing large-scale power stations (important in terms of impact on safety) may be considered, if full adoption to power suppliers in island areas and/or rural distribution cooperatives at once appears to be difficult
- Discussion on applying *Safety Rules* system to power users' facilities and captive power needs to be considered as the next step after the completion of this Study

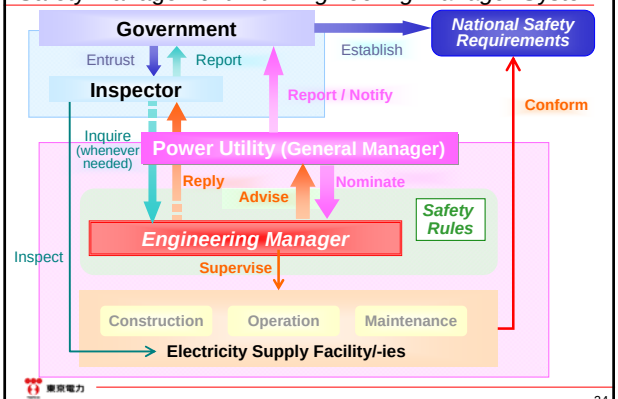
V. Engineering Manager System

Outline of *Engineering Manager* System

- Considering the diversification of players in the power sector of Indonesia, the responsibility for safety management of each electrical facility should be clarified
- The proposed *Engineering Manager* is obliged to supervise the safety of the electrical facility in conformity to *National Safety Requirements*



Safety Management with *Engineering Manager* System



Main Tasks of *Engineering Manager*

Construction

1. Supervision on facility construction plan;
2. Assessing the conformity of construction designing to *National Safety Requirements;*
3. Site investigation during construction works;
4. Inspection before commissioning;

Operation

1. Development of annual activity plan on safety management;
2. Supervision on submission of application / notification documents to the authority;
3. Supervision and assessment of safety rules and manuals;
4. Planning and implementation of safety education
5. Attendance at meetings related to safety management

Maintenance

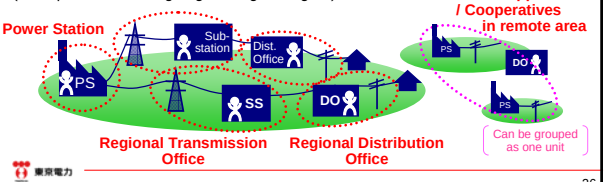
1. Assessment of the condition of facilities in operation (site investigation)
2. Assessment of safety management
3. Supervision on the revision of site patrol policy
4. Measures against abnormalities and/or accidents/troubles
5. Cooperation with statutory inspection carried out by the Inspector

Nomination of *Engineering Manager*

- One *Engineering Manager* must be nominated at the discretion of each power utility, e.g. one each at each Regional Business Unit (e.g. power station, regional transmission office, regional distribution office)
- The rule is applied universally regardless of the types of utilities (e.g. PLN, IPPs, power suppliers in remote islands, rural distribution cooperatives)
- Small utilities (e.g. power suppliers in island areas, rural distribution cooperatives) can be grouped as one Regional Business Unit to nominate an *Engineering Manager*

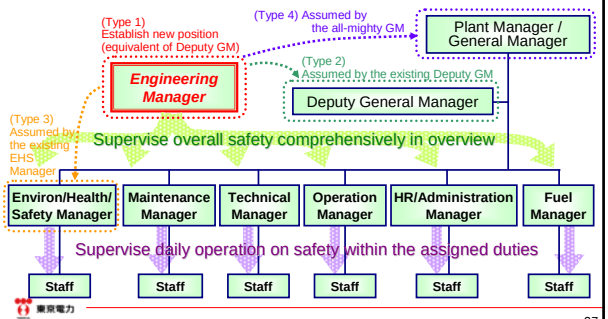
[* The *Engineering Manager* is not necessarily stationed onsite]

(Example of nominating *Engineering Managers*)



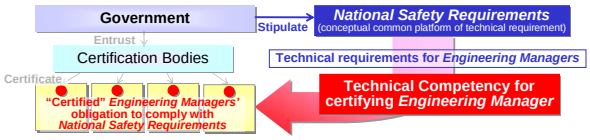
Positioning of *Engineering Manager*

- Positioning of *Engineering Manger* in an organization will not be explicitly provided in regulations, and is up to each power utility's discretion taking into account its own organizational structure and staff capacity, such as…



Certification of *Engineering Managers*

- The Government (via Certification Bodies) provides certification to *Engineering Manager*, based on the Competency Standard that is developed for confirming:
  - ✓ Their understanding of *National Safety Requirements*, the common platform of technical requirements
  - ✓ Their ability of developing *Safety Rules* for their own facilities, which must conform to *National Safety Requirements*
- *Engineering Manager* whose activities fail to comply with *National Safety Requirements* is penalized



Recommended Action Plan (*Engineering Manager*)

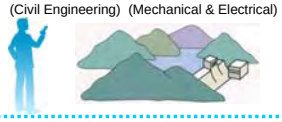
- Legislation for introducing *Engineering Manager* System and promotion for full adoption
- MEMR is suggested to consider developing guidelines that present *Engineering Manager*'s tasks and responsibilities as "sample reference" based on the JICA Study Team's proposal (each utility can develop variations to the sample)
- Gradual adoption of *Engineering Manager* System by prioritizing large-scale power stations (important in terms of impact on safety) may be considered, if full adoption to power suppliers in island areas and/or rural distribution cooperatives at once appears to be difficult
- Discussion on applying *Engineering Manager* System to power users' facilities and captive power needs to be considered as the next step after the completion of this Study

VI. Technical Competency for Engineering Manager

Types of *Engineering Managers*

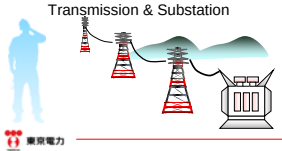
- *Engineering Managers* are classified in accordance with the types of electrical facilities, also considering the actual situation in Indonesia.

Hydropower (Civil Engineering) (Mechanical & Electrical)

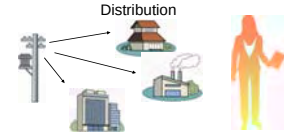


Thermal power

Transmission & Substation



Distribution



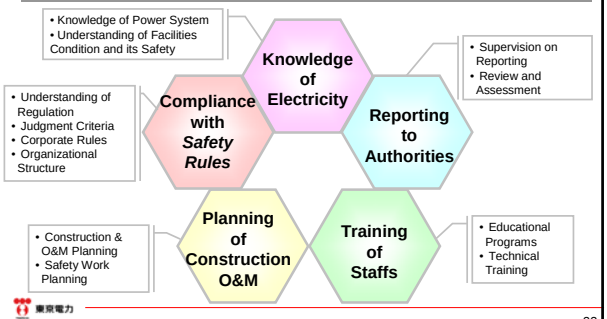
Required Competency for *Engineering Managers*

- Certification bodies asses the applicants' competency with *exam (writing/verbal)* and *relevant work experience & academic background* and issue certifications for each type of facility

Engineering Mgr.	Construction	Operation	Maintenance	*Technical knowledge*
Hydro Power (Civil Engineering)	Basic Competency			Facility Specific Competency for Civil Engineering
Hydro Power (Mechanic. & Elec.)				Facility Specific Competency for Mech. & Elec.
Thermal Power				Facility Specific Competency for Thermal Power
Transmission& Substation				Facility Specific Competency for Trans. & S/S
Distribution				Facility Specific Competency for Distribution

Basic Competency of *Engineering Managers*

- First step, i.e. "Basic Competency", to assess generally required competency regardless of the type of the facilities, followed by the second step, "Facility-specific competency" (see next slides)



Facility-specific Competency (1)

Hydropower (Civil Engineering)

1st Category	2nd Category	3rd Category	
Construction	Planning & Designing	Supervision on Planning	Construction Planning
		Preliminary Survey	Supervision on Design & Specification
	Construction Works	Subcontracting & Procurement	Construction Supervision
		Safety Management	Field Inspection
		Evaluation Reporting	
Operation	Power Supply	Operation Planning	Supervision on Operational Procedures
		Flood prevention	Supervision on operation
		Operation record	
	Restoration of Facilities from Accidents	Initial Reporting	Restoration Planning
		Supervision on tentative restoration	Restoration works
		Final reporting	
	Operational Management	Facility Management	Service Suspension Planning
		Safety Management	Training & Education
Maintenance	Field Inspection & Patrol	Supervision on Site Patrol	Supervision on Patrol Planning
		Field Inspection	Inspection Planning
	Repairing & Maintenance Works	Repairing Works Planning	Investigation & Designing
		Subcontracting & Procurement	Safety Management
		Supervision on Repairing Works	Field Inspection
		Evaluation of Test Results	

Facility-specific Competency (2)

Hydropower (Mechanical & Electrical)

1st Category	2nd Category	3rd Category	
Construction	Planning & Designing	Supervision on Planning	Construction Planning
		Preliminary Survey	Supervision on Design & Specification
	Construction Works	Subcontracting & Procurement	Construction Supervision
		Safety Management	Field Inspection
		Evaluation Reporting	
Operation	Power Supply	Operation Planning	Supervision on Operational Procedures
		Operation record	Maintaining Stable Power Supply
			Supervision on operation
	Restoration of Facilities from Accidents	Initial Reporting	Restoration Planning
		Supervision on tentative restoration	Restoration works
		Final reporting	
	Operational Management	Facility Management	Service Suspension Planning
		Safety Management	Training & Education
Maintenance	Field Inspection & Patrol	Supervision on Site Patrol	Supervision on Patrol Planning
		Field Inspection	Inspection Planning
	Repairing & Maintenance Works	Repairing Works Planning	Investigation & Designing
		Subcontracting & Procurement	Safety Management
		Supervision on Repairing Works	Field Inspection
		Evaluation of Test Results	

Facility-specific Competency (3)

Thermal Power

1st Category	2nd Category	3rd Category	
Construction	Planning & Designing	Supervision on Planning	Construction Planning
		Preliminary Survey	Supervision on Design & Specification
	Construction Works	Subcontracting & Procurement	Construction Supervision
		Safety Management	Field Inspection
		Evaluation Reporting	
Operation	Power Supply	Operation Planning	Supervision on Operational Procedures
		Operation record	Maintaining Stable Power Supply
			Supervision on operation
	Restoration of Facilities from Accidents	Initial Reporting	Restoration Planning
		Supervision on tentative restoration	Restoration works
		Final reporting	
	Operational Management	Facility Management	Service Suspension Planning
		Safety Management	Training & Education
Maintenance	Field Inspection & Patrol	Supervision on Site Patrol	Supervision on Patrol Planning
		Field Inspection	Inspection Planning
	Repairing & Maintenance Works	Repairing Works Planning	Investigation & Designing
		Subcontracting & Procurement	Safety Management
		Supervision on Repairing Works	Field Inspection
		Evaluation of Test Results	

Facility-specific Competency (4)

Transmission & Substation

1st Category	2nd Category	3rd Category	
Construction	Planning & Designing	Supervision on Planning	Construction Planning
		Preliminary Survey	Supervision on Design & Specification
	Construction Works	Subcontracting & Procurement	Construction Supervision
		Safety Management	Field Inspection
		Evaluation Reporting	
Operation	Power Supply	Operation Planning	Supervision on Operational Procedures
		Operation record	Maintaining Stable Power Supply
			Supervision on operation
	Restoration of Facilities from Accidents	Supervision on Emergency Measures	Restoration Planning
		Supervision on tentative restoration	Restoration works
		Final reporting	
	Operational Management	Facilities Management	Service Suspension Planning
		Safety Management	Training & Education
Maintenance	Field Inspection & Patrol	Supervision on Site Patrol	Supervision on Patrol Planning
		Field Inspection	Inspection Planning
	Repairing & Maintenance Works	Repairing Works Planning	Investigation & Designing
		Subcontracting & Procurement	Safety Management
		Supervision on Repairing Works	Field Inspection
		Evaluation of Test Results	

Facility-specific Competency (5)

Distribution

1st Category	2nd Category	3rd Category	
Construction	Planning & Designing	Preliminary Site Survey	Demand Projection
		Supervision on Planning	Supervision on Design & Specifications
	Construction Works	Subcontracting & Procurement	Construction Supervision
		Safety Management	Field Inspection
		Evaluation Reporting	
Operation	Power Supply	Operation Planning	Supervision on Operational Procedures
		Operation record	Maintaining Stable Power Supply
			Supervision on Routines
	Restoration of Facilities from Accidents	Initial Reporting	Restoration Planning
		Supervision on tentative restoration	Restoration works
		Final reporting	
	Operational Management	Facilities Management	Scheduled Outage Planning
		Safety Management	Training & Education
Maintenance	Field Inspection & Patrol	Supervision on Site Patrol	Patrol Planning
		Field Inspection	Inspection Planning
	Repairing & Maintenance Works	Repairing Works Planning	Supervision on Designing & Specifications
		Evaluation of Test Results	Supervision on Repairing Works
		Field Inspection	Subcontracting & Procurement

Recommended Action Plan (Technical Competency)

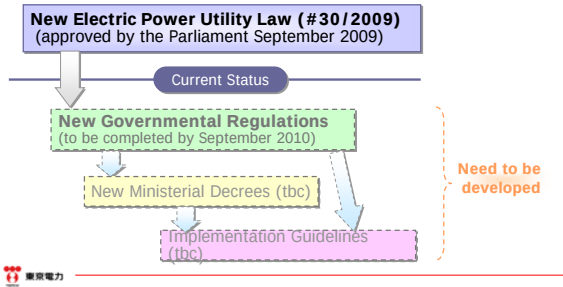
- Based on the list of technical requirements for *Engineering Manager* provided by the JICA Study Team, MEMR staff, together with the Study Team, prepares "template" of Competency Units to be fit for the authorized format
- The JICA Study Team will continue providing MEMR with additional materials by the end of this Study so that MEMR can take over and complete the full set of Competency Units and take next steps such as authorizing competency units and institutionalizing certification & licensing scheme
- For implementing *Engineering Manager* System at ease, making transitional period of certification/licensing before full adoption may need to be considered, such as
  - issuing temporary certification/license without exams (only valid for the first few years) for applicant engineers who have good work experience in the respective fields

Terima Kasih

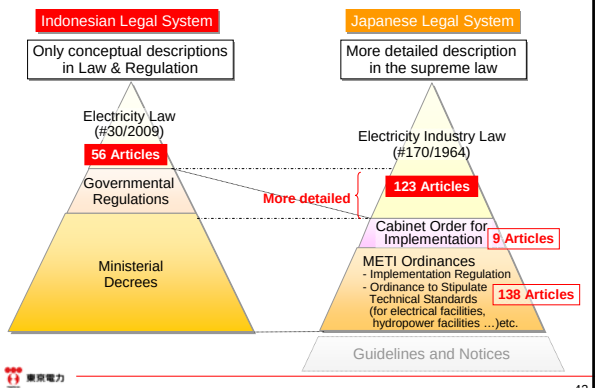
Appendix

Current Status of Institutionalization

- Electric Power Utility Law has been concluded as #30/2009, which only provides conceptual outlines
- Details will be stipulated in the subordinate Governmental Regulations and Ministerial Decrees that will be developed



Structure of Laws and Regulations



Structure of Laws and Regulations (cont'd)

- In general, Japanese Law has more detailed provisions than Indonesian Law, which is evidenced by the fact that Japanese Law consists of 123 Articles, more than twice of Indonesian Law
- For instance, regarding the safety of electrical facilities,
  - In Indonesian New Electric Power Utility Law, there's a simple stipulation,

    Article 44 (1): Every activity of electric power utility needs to be in conformity to Electricity Safety Regulations

    thus details are left to Governmental Regulations (and Ministerial Decrees) that are to be developed in a year
  - Japanese Electricity Industry Law provides more stipulations, such as
    - Article 39 - 41: Conformity to technical standards;
    - Articles 42: Establishment of Safety Rules;
    - Articles 43 - 45: Nomination of Chief Engineers;

    and detailed provision of facility inspection are also found in Articles 47 - 55

- Provisions in Japanese Law can be the reference for developing Governmental Regulations and Ministerial Decrees in Indonesia

[Japan's Case] Overview of Electricity Industry Law

- Chapter 1: General Provisions (Articles 1 - 2)
- Chapter 2: Electricity Business (# 3 - 37)
- Chapter 3: Electric Facilities (# 38 - 57)
  - Section 1: Definitions (# 38)
  - Section 2: Electric Facilities for Business Use (# 39 - 57)
    - Subsection 1: Conformity to Technical Standards (# 39 - 41)
    - Subsection 2: Autonomous Safety Management (# 42 - 45)
    - Subsection 2-2: Special Provisions on Environmental Impact Assessment (# 46)
    - Subsection 3: Construction Plan and Inspection (# 47 - 55(1))
    - Subsection 4: Succession (# 55(2))
  - Section 3: Electric Facilities for General Use (# 56 - 57)
- Chapter 4: Use of Land (# 58 - 66)
- Chapter 5: Registered Safety Management Examination Body, Designated Examining Body, and Registered Investigation Body (# 67 - 92)
- Chapter 6: Organization to Support Electricity Transmission and Distribution
- Chapter 7: Miscellaneous Provisions (# 93 - 99)
- Chapter 8: Penalties (# 100 - 114)
- Appendix Provisions (# 115 - 123)

Provisions related to safety management

[Japan's Case] Conformity to Safety Requirements

- The Japanese Law stipulates four main principles of "Technical Standards" (Safety Requirements) that a Power Utility needs to comply with, and their details are provided in Ministerial Ordinances

Article 39: A *(power utility)* shall maintain the facilities to ensure that they conform to the technical standards established by METI Ordinance

(2): The METI Ordinance in the preceding paragraph shall be formulated in accordance with the following:

(i) Electric Facilities for *(power supply)* shall not cause bodily harm nor inflict damage to objects

(ii) Electric Facilities for *(power supply)* shall not cause electric nor magnetic interference with other electric equipment or objects

(iii) Damage to Electric Facilities for *(power supply)* shall not significantly hinder the supply of electricity by an *(electricity power utility)*

(iv) Where Electric Facilities for *(power supply)* are used by an *(electricity power utility)*, damage to the Electric Facilities for *(power supply)* shall not significantly hinder the supply of electricity pertaining to the *(electricity power utility)*

[Japan's Case] Establishment of *Safety Rules*

- Each power utility is obliged to establish *Safety Rules*, and to notify to the Government before commencement of using electric facilities in order to ensure safety in construction, operation, and maintenance of these facilities
- The Government can order the power utility to revise Safety Rules when it is necessary for ensure safety

Article 42: A *(power utility)* shall, in order to ensure safety of the construction, maintenance and operation of the Electric Facilities (…), establish Safety Rules for each organization in charge of the Electric Facilities for *(power utility)* the safety of which should be secured uniformly, and notify the Minister of Economy, Trade and Industry of the rules before the commencement of the use of the Electric Facilities for *(power utility)* by the organization (in the case of facilities requiring self-inspection (…), before the commencement of the construction of the facilities).

(2): The Minister (…), when he/she finds it necessary in order to ensure safety of the construction, maintenance, and operation of Electric Facilities (…), orders (…) to revise the Safety Rules

[Japan's Case] Nomination of *Engineering Manager*

- Each power utility is obliged to nominate at least one licensed Chief Engineer and to notify the Government of the nomination.
- Chief Engineers are responsible for supervising the safety of the construction, maintenance, and operation of facilities

Article 43: A (power utility) shall (…), appoint one or more chief engineers from among persons who have a chief engineer's license in order to cause him/her to supervise the safety of the construction, maintenance, and operation of the facilities.

(2): …

(3): A (power utility) shall, when having appointed a chief engineer (…), notify the Minister of Economy, Trade and Industry to that effect without delay. The same shall apply when such person has dismissed the chief engineer.

(4): The chief engineer shall perform the duty of supervising the safety of the construction, maintenance, and operation (…) in good faith.

(5): People who are engaged in the construction, maintenance or operation of Electric Facilities (…) shall follow the instructions given by the chief engineer to ensure the safety thereof.

[Japan's Case] Construction Plan and Inspection

- Especially important facilities in terms of safety need to gain approval on the plan and to pass Government's inspection
- Notification of the construction plan and carrying out self-inspection are needed for facilities that are important next to the aforementioned

Article 47: A person who intends to (…) install or modify Electric Facilities (…) specified by an Ordinance of METI as being particularly important for assuring public safety, shall obtain approval of the plans (…) from the Minister of Economy, Trade and Industry (…)

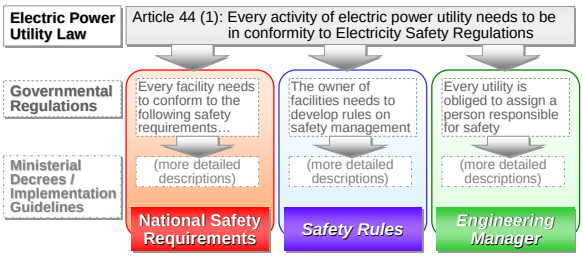
Article 49: Electric Facilities (…) to be installed or modified according to a construction plan approved under Article 47 (…) shall not be used unless and until they undergo and pass an inspection conducted by the Minister of Economy, Trade and Industry

Article 48: A person who intends to (…) to install or modify Electric Facilities (…) specified by an Ordinance of METI, shall notify the Minister (…) of the plan of the construction project.

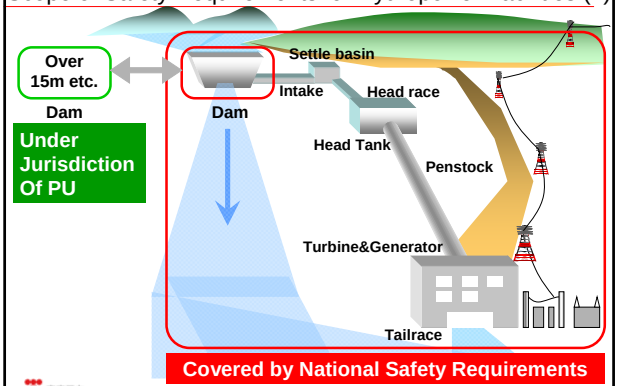
Artcl. 50-2: A person (…) pursuant to Article 48 (…) shall conduct a self-inspection of the Electric Facilities (…) before commencing the use thereof, record the inspection results, and preserve such records (…)

Application in Indonesian Legal Structure

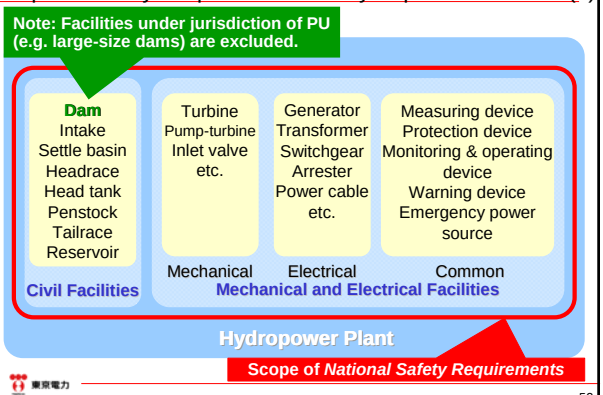
- Considering the nature of legal structure in Indonesia, description of National Safety Requirements, Safety Rules and Engineering Manager system may be better still conceptual, and details will be provided in the subordinate Ministerial Decree and/or Implementation Guidelines (tbc)



Scope of Safety Requirements for Hydropower Facilities (1)

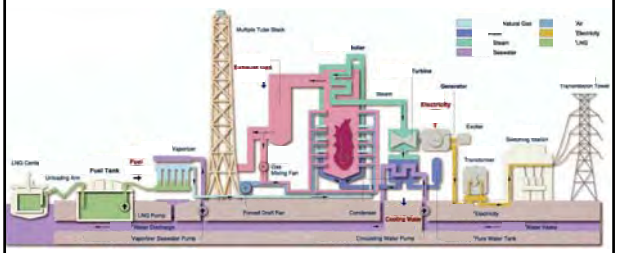


Scope of Safety Requirements for Hydropower Facilities (2)



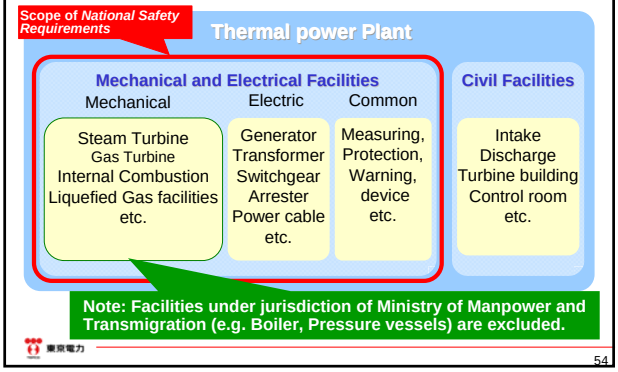
Scope of Safety Requirements for Thermal Power Facilities (1)

General layout of Thermal power plant



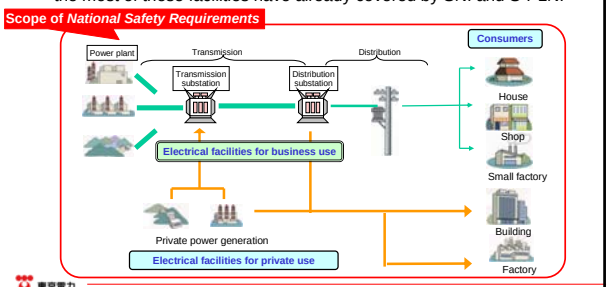
Scope of Safety Requirements for Thermal Power Facilities (2)

General constitution of Thermal power plant



Scope of Safety Requirements for Transmission and Distribution Facilities

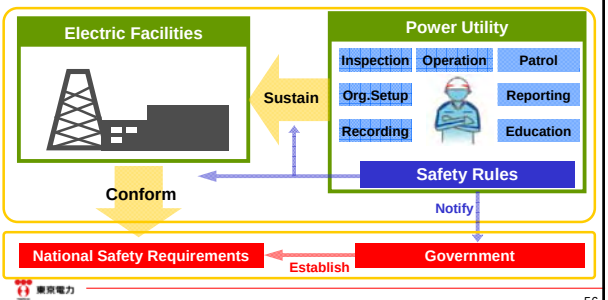
- Transmission and Distribution networks which supply power to customers are regulated by *National Safety Requirements*.
- In-house low voltage wiring as well as self-use of high voltage facilities are also regulated by *National Safety Requirements*. And the most of these facilities have already covered by SNI and S-PLN.



Safety Rules in Conformity with National Safety Requirements

National Safety Requirements : The government stipulates "the standard which electric facilities must reach for securing public safety and stable power supply"

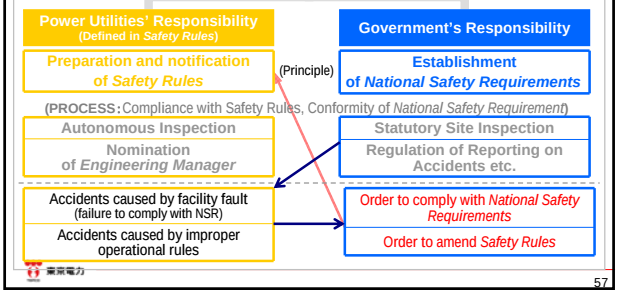
Safety Rules : Each Power Utility stipulates "The measures to conform with the *National Safety Requirements*"



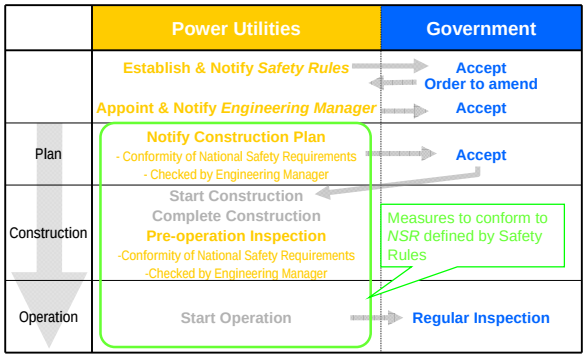
System for Ensuring Safety for Electric Facilities

- Establishment of the principle that owners of electrical facilities secure safety on their own responsibility

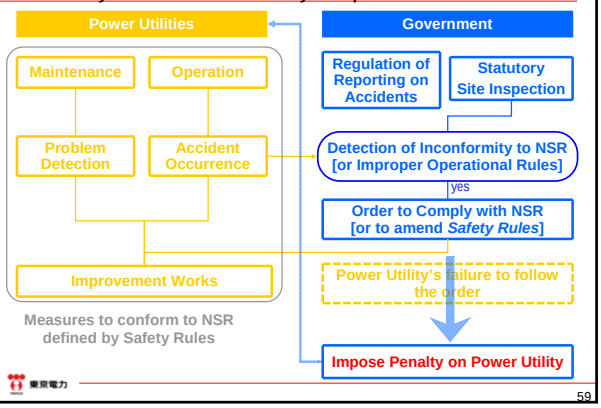
Clarification of the Responsibility of the Government and Power Utilities



Flow of Inspection on Newly Constructed Facilities (Japan's Case)



Inconformity with National Safety Requirements and Penalties



Licensing of *Engineering Managers*

- Licenses of *Engineering Managers* can be issued to the persons who are applicable to whichever in the followings;

1. Persons who have passed both the writing and verbal exams done by the Designated Certification Bodies
2. Persons who have eligible Work Experience and Academic Background.
   [Detailed requirements are stipulated in Ministerial Decree]
3. Persons who are accredited by the Minister of Energy and Mineral Resources as the eligible ones with capabilities equal to or beyond the aforementioned (1) or (2)

1.5　5th Seminar (January 27, 2010)

SUSUNAN ACARA SEMINAR KE - 5
"DEVELOPMENT OF TECHNICAL STANDARDS AND COMPETENCY STANDARDS IN ELECTRICAL POWER SECTOR IN INDONESIA"

Rabu, 27 January 2010

Waktu	Acara	Pelaksana
08.30 – 09.00	Pendaftaran peserta	Panitia
09.00 – 09.20	Pembukaan : a. Sambutan dari Embassy of Japan b. Sambutan dari JICA Indonesia Office c. Sambutan dan Pembukaan oleh Direktur Jenderal Listrik dan Pemanfaatan Energi	 Mr. Takehiro Tsuchiya *Secretary* *Embassy of Japan* Mr. Hiroyuki Kawanishi *Senior Representative* *JICA Inodonesia Office* Ir. Johnni R.H. Simanjuntak Direktur Teknik dan Lingkungan Ketenagalistrikan, DESDM
09. 20 – 09. 40	Coffee break	Panitia
09. 40 – 11.50	Presentasi & QA : *1. Overview of the JICA Study Team's Proposal* *2. Answers to Frequently Asked Questions (FAQs) about the JICA Study Team's proposal* ✓ *National Safety Requirements* ✓ *Safety Rules* ✓ *Engineering Manager System* ✓ *Technical Competency for Engineering Manager* *3. Action Plan for MEMR after the completion of the Study*	 *JICA Study Team* Moderator : Ir. Arief Indarto, MM. Ditjen Listrik dan Pemanfaatan Energi DESDM
11.50 – 12.00	Penutupan	Mr. Yoshikazu Wada *Assistant Director* *Industrial Development Department* *JICA Head Office*
12.00 – selesai	Makan Siang	Panitia

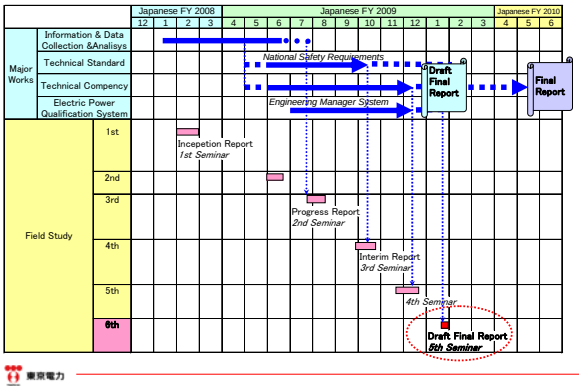
The Study on Development of Technical Standards and Competency Standards in Electrical Power Sector in Indonesia

- Presentation for the 5th Seminar-

27th January 2010
JICA Study Team

東京電力 TEPCO

Overall Work Plan and the 6th Field Study



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Obejctives of Today's Seminar

- Today's seminar is the 5th and the final seminar of this JICA Study
- Therefore, today's seminar does not aim at proposing something new besides what have been presented in the preceding 4 seminars, but focuses on
  - Summarizing what the JICA Study Team has proposed to Indonesian stakeholders; and
  - Answering to the Frequently Asked Questions (FAQs) that have been made by Indonesian stakeholders in the past;
- In addition, the JICA Study Team would like to present what actions the Indonesian counterparts (MEMR) are expected to take after the completion of this Study, i.e. from now on [please be noted that the "Action Plan" that is presented today is tentative and more discussion for brush-up is needed]

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I. Overview of the JICA Study Team's proposal

II. Answers to Frequently Asked Questions (FAQs) about the JICA Study Team's proposal
- Also refer to the handbook "Buku Pegangan tentang Peningkatan Keselamatan Instalasi Tenaga Listrik"

III. Action Plan for MEMR after the completion of the Study

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I. Overview of the JICA Study Team's proposal

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The JICA Study Team's Proposal

- The JICA Study Team has so far proposed 3 main pillars for securing safety based on the experience in Japan, i.e. *National Safety Requirements*, *Safety Rules*, and *Engineering Manager* system;
- The JICA Study Team expects that these proposals are taken into account in developing new Regulations and Decrees

National Safety Requirements : **Conceptual common platform of technical requirements for securing safety of electrical facilities**

Safety Rules : **Operational principles that each Power Utility must comply with**

Engineering Manager : **Nomination of a qualified person who supervises the overall safety**

Institutional Framework for Securing Safety

: **Improving technical competency of engineers through certification**

Capacity Development

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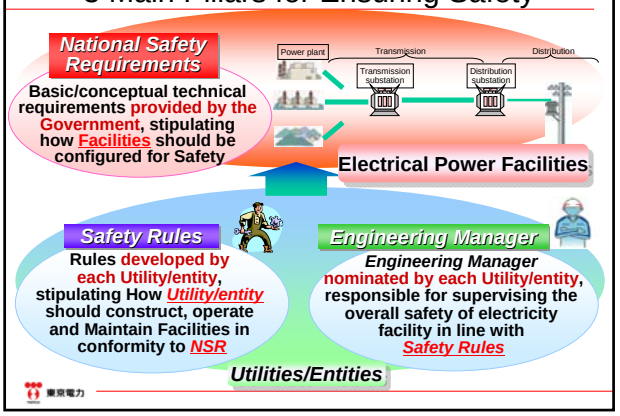
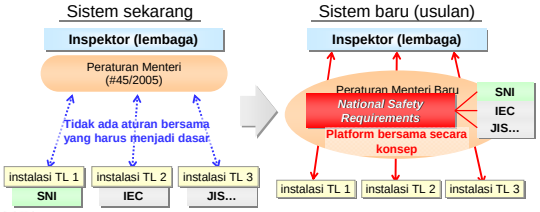
3 Main Pillars for Ensuring Safety



II. Answers to Frequently Asked Questions(FAQs) about the JICA Study Team's proposal

Outline - *National Safety Requirements*

- Persyaratan minimum yang diperlukan guna memelihara keselamatan instalasi yang ditetapkan oleh pemerintah.
- Sekarang ini standar kuantitatif yang harus diterapkan dalam setiap instalasi tenaga listrik ditentukan oleh kebijakan setiap pelaku usaha. Sebagai persyaratan dasar dalam menerapkan standar-standar ini diberikan platform secara konseptual terkait spesifikasi yang harus dimiliki instalasi.



National Safety Requirements (Q1-1)

Q. Apakah perbedaan antara *National Safety Requirements* dan SNI?

- *National Safety Requirements* merupakan ketentuan yang berkaitan dengan kinerja yang diperlukan dalam rangka menjaga keselamatan instalasi ketenagalistrikan. Sedangkan, SNI merupapan ketentuan berupa spesifikasi konkrit untuk peralatan dll.
- Saat ini kriteria/patokan kuantitatif yang diterapkan untuk setiap instalasi ketenagalistrikan ditetapkan oleh masing-masing pelaku usaha. Sedangkan *National Safety Requirements* menyediakan platform bersama sebagai asumsi yang mendukung penerapan kriteria tersebut berkaitan dengan kinerja yang harus dijaga pada instalasi.

National Safety Requirements (Q1-2)

Q. Apakah *National Safety Requirements* ini merupakan aturan wajib sesuai peraturan menteri dll, ataukah aturan sukarela?

- *National Safety Requirements* diusulkan sebagai aturan wajib.
- Pasal 44 ayat (5) UU No.30/2009 mengatur kewajiban pemenuhan SNI untuk peralatan dan pemanfaat tenaga litsirik. Namun SNI hanya menetapkan spesifikasi peralatan secara konkret tetapi tidak menetapkan pemikiran yang melatarbelakangi ketentuan tersebut secara konseptual bagaimana seharusnya instalasi dipasang dan dipelihara dalam rangka menjaga keselamatan penyediaan tenaga listrik.
- *National Safety Requirements* menetapkan kinerja yang harus dipelihara pada instalasi. Standar teknis seperti SNI, standar internasional dll diacu atau disusun dengan prasyarat mengikuti *National Safety Requirements* ini.

National Safety Requirements (Q1-3)

Q. Apakah *National Safety Requirements* ini merupakan aturan wajib sesuai peraturan menteri dll, ataukah aturan sukarela?

- Spesifikasi detail untuk instalasi yang sudah ada tetap mengacu pada standar yang sudah ada seperti SNI.
- Namun dalam hal pemasangan instalasi baru dan apabila standar teknis yang diacu dianggap ada bagian yang tidak memenuhi persyaratan konseptual sebagaimana diatur pada *National Safety Requirements* sepenuhnya, maka DESDM dapat memberi suatu pengarahan.
- *National Safety Requirements* merupakan ketentuan persyaratan kinerja yang dibutuhkan pada instalasi. Pada prinsipnya sesuai dengan standar teknis yang sudah ada.

National Safety Requirements (Q1-4)

Q. Apakah *National Safety Requirements* tidak menetapkan instalasi pembangkit listrik tenaga nuklir sebagai obyeknya?

- Tidak termasuk instalasi PLTN. Alasannya:
  1. Instalasi pembangkit tenaga listrik tenaga nuklir memerlukan persyaratan teknis yang canggih dan khusus dibandingkan instalasi pembangkit listrik lainnya sehingga di Jepang pun dibuat persyaratan teknis secara khusus/terpisah yang berbeda denga instalasi pembangkit listrik lainnya.
  2. Saat ini di Indonesia tidak ada instalasi pembangkit listrik tenaga nuklir secara komersial. Kewenangan yang terkait dengan pengembangan teknologi tenaga nuklir dan penataan aturan hukum ada pada BATAN dan BAPETEN, bukan DESDM.

National Safety Requirements (Q1-5)

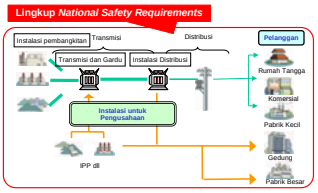
Q. Apakah *National Safety Requirements* tidak menetapkan energi terbarukan, seperti instalasi pembangkit listrik panas bumi, angin, dan tenaga surya, dll sebagai obyeknya?

- Instalasi yang terkait dengan energi yang terbarukan belum dimasukkan ke dalam *National Safety Requirements* karena spesifikasi teknis untuk masing-masing instalasi masih berbeda secara signifikan dan peraturan mendasar yang harus diacu oleh seluruh instalasi tersebut masih sedikit.
- Meskipun demikian, persyaratan umum tenaga listrik yang terkait dengan seluruh instalasi pembangkit listrik tercakup dalam *National Safety Requirements*. Selain itu, instalasi yang terkait langsung dengan pembangkit listrik panas bumi, kecuali bagian sumur uap, pada prinsipnya sama dengan pembangkit listrik tenaga uap sehingga diacu pada aturan untuk pembangkit listrik tenaga uap.

National Safety Requirements (Q1-6)

Q. Apakah *National Safety Requirements* tidak menetapkan instalasi bertegangan menengah ke atas dan instalasi pemanfaatan bertegangan rendah sebagai obyeknya?

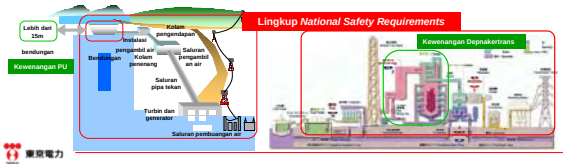
- Instalasi bertegangan menengah ke atas dan instalasi pemanfaatan bertegangan rendah menjadi obyek.
- *National Safety Requirements* meliputi semua instalasi ketenagalistrikan, khususnya pada ketentuan instalasi penyaluran (Bagian II, Bab 1).



National Safety Requirements (Q1-7)

Q. Apakah instalasi (seperti pengelasan, bendungan besar, dll), yang diawasi lembaga pemerintah selain DESDM, tidak menjadi obyek dalam *National Safety Requirements*?

- Bendungan besar, pengelasan dll tidak termasuk. Alasannya:
  1. Menghindari terjadinya aturan yang timbang tindih untuk obyek yang sudah diatur bidang keselamatan oleh instalnsi lain misalnya bendunga besar (PU), pengelasan (Depnakertrans).
  2. Namun instalasi boiler yang berkaitan dengan pembangkitan dilakukan pengawasan oleh DESDM dan Depnakertrans, maka termasuk pada lingkup *National Safety Requirements*.



National Safety Requirements (Q1-8)

Q. Dalam *National Safety Requirements* hanya sedikit ketetapan secara kuantitatif. Bukankah hal ini belum sempurna sebagai standar teknis?

- *National Safety Requirements* merupakan persyaratan(platform bersama) yang berkaitan dengan spesifikasi yang harus dipelihara pada instalasi ketenagalitsrikan yang diatur oleh pemerintah. Oleh karena itu, persyaratan fungsional yang tidak mengandung angka secara kongkrit.
- SNI atau standar internaional seperti IEC mengatur spesifikasi detail termasuk angka kongkret yang dapat digunakan sebagai patokan. (Lihat hubungan dengan *National Safety Requirements* di bawah ini)

Penjelasan aturan di Jepang (1)

- NSR merupakan persyaratan teknis secara konseptual. “Penjelasan aturan di Jepang” merupakan contoh konkret yang dijabarkan dari persyaratan teknik yang dituntut NSR berupa nilai/angka, rumus dll.

Pasal 21 NSR Pencegahan Memasuki Gardu Induk, dll selain Operator

- Pada gardu induk, gardu hubung atau tempat yang dipersamakan yang dipasang peralatan elektromekanik bertegangan menengah, tinggi, atau ekstra tinggi, saluran bus dll, harus dilakukan tindakan yang tepat sekaligus menunjukkan bahaya yang ada pada peralatan elektromekanik, bus, dll agar selain operator tidak mudah masuk ke dalam area tersebut.

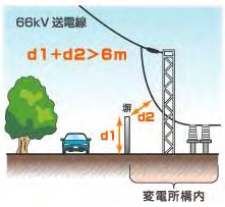
Pasal 43 Penjelasan aturan di Jepang

1. Pada gardu induk, gardu hubung atau tempat yang dipersamakan yang dipasang peralatan elektromekanik bertegangan menengah, tinggi, atau ekstra tinggi, saluran bus dll, harus lakukan tindakan yang tepat agar selain operator tidak mudah masuk ke dalam area tersebut yaitu:
2. Apabila pagar, tembok dll sebagaimana diatu pada ayat 1 berdekatan dengan bagian aktif tegangan ekstra tinggi, Penjumlahan ketinggian pagar, dinding, dll di sekitar lokasi yang sejenis gardu induk, dll, dengan jarak dari pagar, dinding, dll hingga bagian aktif tegangan ekstra tinggi berada di atas nilai yang ditetapkan sebagaimana tabel 43-1 sesuai dengan kategori tegangan
   1) Memasang pagar, tembok dll
   2) Memasang petunjuk larangan memasuki areal tersebut di depan pintu
   3) Memasang kunci atau peralatan lain yang tepat di depan pintu
3. dst

Penjelasan aturan di Jepang (2)

Tabel 43-1

Kategori tegangan	Penjumlahan ketinggian pagar, dinding, dll di sekitar lokasi yang sejenis gardu induk, dll, dengan jarak dari pagar, dinding, dll
35,000V atau lebih kecil	5m
35,000V s/d 160,000V	6m
Lebih dari 160,000V	6m ditambah 12cm untuk setiap kelipatan 10,000V



National Safety Requirements (Q1-9)

Q. Apakah dalam *National Safety Requirements* tidak dipertimbangkan keselamatan terkait gempa bumi?

- Dalam *National Safety Requirements* dipertimbangkan pula penanganan untuk gempa bumi. Misalnya konstruksi aman yang mempertimbangkan kekuatan gempa bumi (Pasal 60) untuk kekuatan beban bendungan, dll.
- Namun demikian, metode perhitungan beban secara kongkrit ditetapkan dalam standar detil aturan penjabarannya.

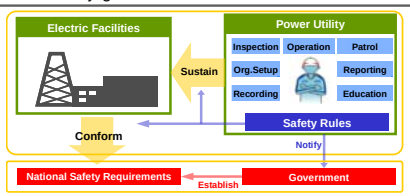
Outline - *Safety Rules*

- Agar menjamin dilaksanakannya tugas harian untuk memelihara spesifikasi instalasi yang telah ditetapkan dalam *National Safety Requirements*, maka pengusaha menetapkan kebijakan dasar terkait operasional instalasi sebagai *Safety Rules*, serta diwajibkan memberikannya pada pemerintah.
- Pelaku usaha menetapkan dan melaksanakan dokumen internal seperti manual tugas lebih detil, dll berdasarkan *Safety Rules*

Safety Rules (Q2-1)

Q. Bagaimanakah perbedaan antara *National Safety Requirements* dengan *Safety Rules*?

- *National Safety Requirements* merupakan ketentuan bagaimana seharusnya kondisi instalasi dalam rangka menjaga keselamatan penyediaan tenaga listrik.
- Sedangkan *Safety Rules* lebih berfokus pada kegiatan yang dilakukan oleh "manusia" apa yang harus di lakukan sehari-hari dalam rangka mencapai dan menjaga kondisi instalasi.



Safety Rules (Q2-2)

Q. Siapa yang menyusun *Safety Rules*

- *National Safety Requirements* ditetapkan pemerintah (DESDM), sedangkan *Safety Rules* pada prinsipnya ditetapkan oleh pelaku usaha.

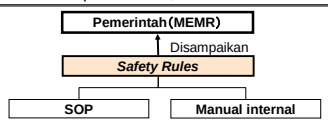
  Alasannya:

  1. *Safety Rules* merupakan aturan dasar yang harus diikuti oleh pelaku usaha dalam konstruksi, operasi dan pemeliharaan yang bukannya diatur secara seragam oleh pemerintah harus disusun sesuai dengan instalasi yang diiliki dan metode yang digunakan oleh masing-masing pelaku usaha. Yang lebih rasional adalah setiap pelaku usaha yang memiliki instalasi berbeda yang menyusun masing-masing aturan dan disampaikan kepada pemerintah.
  2. PLN, IPP skala besar sudah menyusun aturan internal dan manual operasional untuk instalasi yang dimiliki. Pengalaman tersebut dapat dimanfaatkan dalan penyusunan *Safety Rules* bagi setiap pelaku usaha.
  3. Kebijakan pokok yang berkaitan dengan organisasi dan kelembagaan serta tugas di bidang keselamatan instalasi perlu disesuaikan dengan perkembangan teknologi, perubahan iklim usaha dll. Oleh karena itu *Safety Rules* sebaiknya disusun oleh pelaku usaha.

Safety Rules (Q2-3)

Q. Pemerintah menuntut pembuatan SOP sebagai kebijakan dasar pelaksanaan tugas. Bagaimanakah perbedaannya dengan *Safety Rules*?

- SOP(Standard Operation Procedure) merupakan prosedur operasional secara mendasar dalam tugas-tugas setiap bidang industri yang diatur Depnakertrans.
- Sedangkan *Safety Rules* menetapkan prinsip dasar tentang organisasi dan tanggungjawab serta tugas-tugas harian dalam dimensi konseptual yang merupakan deklarasi kepatuhan. Berbeda dengan SOP, substansi yang dideklarasikan di sini dievaluasi oleh DESDM apakah sesuai atau tidak dari sisi manajemen keselamatan, serta apakah substansi ini dipatuhi/tidak, dll.



Safety Rules (Q2-4)

Q. Terlepas dari pembuatan manual operasional tugas secara mandiri oleh pelaku usaha, apakah pelaku usaha dituntut untuk membuat dan melaporkan *Safety Rules*?

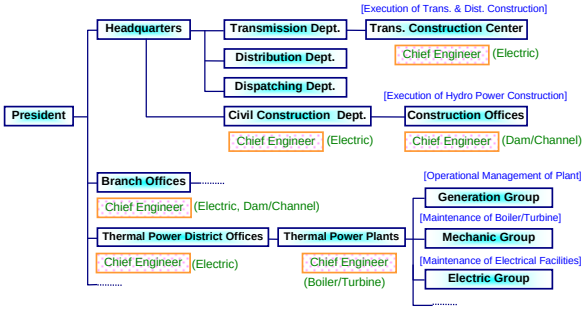
- Ya. Alasannya:
  1. Manual operasional tugas yang dibuat secara mandiri oleh pelaku usaha merupakan dokumen pribadi milik setiap pelaku usaha dan tidak dikenai peraturan DESDM secara langsung.
  2. *Safety Rules* menunjukkan dipatuhinya prinsip dan dilaksanakannya tugas yang terkait dengan keselamatan instalasi dengan melaporkan hal-hal yang sesuai dengan kebijakan dasar dan rangkuman manual operasional tugas ini kepada DESDM.
  3. Manual operasional yang sudah ada dapat dimanfaatka dalam penyusunan *Safety Rules*.

Safety Rules (Q2-5)

Q. Apa sajakah hal-hal yang harus dimasukkan dalam *Safety Rules*?

- Secara garis besar terdiri dari 2 hal yaitu sistem organisasi guna memelihara keselamatan instalasi (terutama penempatan *Engineering Manager*, dll, klarifikasi pembagian tanggung jawab) serta kebijakan dasar tugas harian seperti teknik dan frekwensi pelaksanaan patroli, dll.
- Secara kongkrit sebagai berikut (usulan saat ini, detil sedang terus dipertimbangkan):
  - ✓ Sistem organisasi dan tanggung jawab untuk memelihara keselamatan instalasi
    - 1.1. Sistem organisasi pelaku usaha
    - 1.2. Tugas *Engineering Manager* dan posisinya dalam organisasi
    - 1.3. Kewenangan tugas setiap staf yang terkait dengan keselamatan instalasi
    - 1.4. Pelaksanaan diklat keselamatan bagi pekerja
  - ✓ Prinsip dasar terkait tugas keselamatan instalasi
    - 2.1. Konstruksi, operasi, dan pemeliharaan instalasi penyediaan tenaga listrik
    - 2.2. Inspeksi instalasi penyediaan tenaga listrik
    - 2.3. Pencatatan terkait keselamatan instalasi penyediaan tenaga listrik
    - 2.4. Laporan berkala dan laporan kecelakaan terkait instalasi tenaga listrik

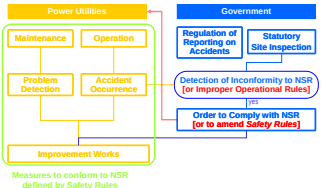
<Appendix> Example of Organization Chart



Safety Rules (Q2-6)

Q. Perintah perbaikan *Safety Rules* dari pemerintah kepada pelaku usaha dimungkinkan. Perintah seperti apakah ini?

- Pada dasarnya dihargai aturan yang ditetapkan secara mandiri oleh pelaku usaha karena aturan tersebut dianggap telah dipertimbangkan cukup untuk menjamin keselamatan instalasi.
- Namun demikian, apabila sering terjadi kecelakaan dan masalah terjadi pada pelaku usaha tersebut, instruksi akan dikeluarkan oleh DESDM agar meningkatkan frekwensi dan substansi inspeksi instalasi serta meningkatkan jumlah penempatan *Engineering Manager*.



Safety Rules (Q2-7)

Q. Dalam *Safety Rules* ditetapkan materi laporan kepada pemerintah terkait kecelakaan, dll. Apakah yang dilaporkan secara kongkritnya?

- Saat ini tidak ada ketentuan yang berkaitan dengan materi laporan. Oleh karena itu hal tersebut akan diatur didalam *Safety Rules*. Materi pelaporannya seperti berikut:

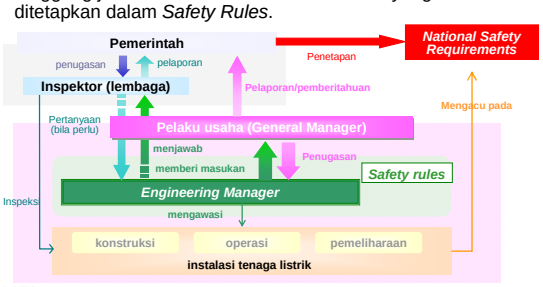
  [Obyek yang harus dilaporkan]
  - – Luka atau kematian akibat sengatan listrik
  - – Kebakaran akibat listrik
  - – Kerusakan instalasi penyediaan tenaga listrik utama
  - – Kecelakaan besar seperti pemadaman luas dll

  [Cara pelaporan]
  - – Pelaporan kecelakaan (laporan kilat) sesegera mungkin setelah kejadian dengan laporan yang detail
  - – Pelaporan berkala: Hasil akumulasi/klasifikasi kejadian dalam periode tertentu

<Appendix> Reporting to the Government

Outline - *Engineering Manager System*

- Mewajibkan setiap pelaku usaha untuk menugaskan sejumlah *Engineering Manager* yang diperlukan sebagai penanggung jawab pengawasan dalam mengemban sistem organisasi dan tanggung jawab terkait keselamatan instalasi yang telah ditetapkan dalam *Safety Rules*.



Engineering Manager System (Q3-1)

Q. Sebutan "*Engineering Manager*" dan tugas yang dituntut terasa tidak sesuai. Bagaimana jika dibuatkan nama lain?

- *Engineering Manager* merupakan nama sementara yang diusulkan oleh JICA. Sejauh ini kami telah menerima berbagai komentar tentang perubahan nama dan sedang dipertimbangkan di internal DESDM. Maka sebaiknya sebutan ditetapkan oleh pihak Indonesia.

Engineering Manager System (Q3-2)

Q. Apakah *Engineering Manager* merupakan pengganti ataukah termasuk bagian dari inspektor pemerintah saat ini?

- Inspektor, selaku wakil pemerintah, adalah pihak yang mencari apakah kondisi instalasi terpelihara/tidak, sedangkan *Engineering Manager*, selaku wakil pelaku usaha, adalah pihak yang bertanggung jawab untuk memelihara keselamatan instalasi. Dengan demikian, posisi keduanya adalah berbeda.
- Justru saat inspektor melaksanakan inspeksi, yang menghadapinya dari pihak pelaku usaha adalah *Engineering Manager* sehingga keduanya bisa memiliki hubungan selaku counter-part yang terkait dengan tugas inspeksi.

Engineering Manager System (Q3-3)

Q. Apakah penugasan dan pelaporan *Engineering Manager* akan diwajibkan?

- Usulan dari JICA adalah sama dengan Jepang yaitu mewajibkan seluruh pelaku usaha yang terkait dengan konstruksi, operasi dan pemeliharaan "instalasi penyediaan tenaga listrik untuk kepentingan umum" agar menugaskan staf yang memiliki sertifikasi nasional sebagai *Engineering Manager*.
- Proyek kali ini tidak meliputi instalasi pembangkitan kepentingan sendiri dan instalasi pemanfaatan tenaga listrik bertegangan menengah ke atas. Namun sistem *Engineering Manager* untuk instalasi tersebut diharapkan disediakan pada masa yang akan datang.

Engineering Manager System (Q3-4)

Q. Apakah ada masa transisi dalam penerapan *Engineering Manager* System

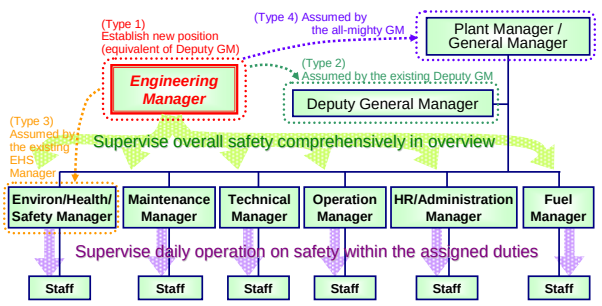
- Sebaiknya ada masa transisi agar meminimalisir kebingungan dalam implementasi dan sistem tersebut tersosialisasi secara optimal.
- Caranya, lingkup kewajiban pengangkatan *Engineering Manager* diterapkan secara bertahap. Misalnya pada awalnya hanya pada instalasi penting seperti pembangkit besar dari segi keselamatan. Setelah itu baru diperluas ke skala menengah dan kecil.

Engineering Manager System (Q3-5)

Q. Apabila *Engineering Manager* menangani pertanggungjawaban atas keselamatan instalasi, apakah ini berarti posisinya lebih tinggi dari manajer tertinggi (pimpinan pembangkit listrik, GM)?

- Posisi tidak ada kaitannya. Misalnya *Engineering Manager* (penanggungjawab teknis) dibawah General Manager (kecuali kedua posisi dirangkap satu orang), dia tetap dapat memberi perintah kepada General Manager tersebut dalam hal keselamatan.
- Penanggungjawab teknik berbeda perannya dengan General Manager sebagai penanggungjawab di 1 unit usaha.
- Peranan General Manager pada1unit usaha (pembangkit listrik, dll) dan *Engineering Manager* berbeda. *Engineering Manager* merupakan staf bawahan General Manager (kecuali bila keduanya dirangkap tugas oleh 1 orang yang sama).
- Peran utama General Manager adalah mengontrol manajemen organisasi sedangkan untuk memahami detil secara teknis terkait instalasi sulit secara jabatannya. *Engineering Manager* yang harus melengkapinya berfungsi sebagai technical advisor bagi General Manager.
- Tugas terhadap pihak eksternal secara teknis murni seperti respon, pelaporan, dll kepada inspektor pemerintah tentu saja dianggap akan lebih lancar apabila dilakukan oleh *Engineering Manager*.

<Appendix> Positioning of *Enigneering Manager*



Engineering Manager System (Q3-6)

Q. Ada pelaku usaha yang telah menempatkan manajer penanggung jawab keselamatan. Apakah ini berarti perintah untuk menetapkan posisi sebagai *Engineering Manager* baru sebagai tambahan?

- Apabila telah menempatkan manajer yang setaraf *Engineering Manager*, tidak perlu menempatkan lagi *Engineering Manager* baru.
- Namun demikian, pihak yang ditugaskan dalam posisi ini diharuskan memiliki sertifikasi nasional yang sesuai dan melaksanakan tugas yang diatur UU.

Engineering Manager System (Q3-7)

Q. Seberapa besarkah ruang lingkup tanggung jawab atau instalasi yang ditangani seorang *Engineering Manager*? Sebaiknya berapa orang *Engineering Manager* harus ditempatkan dalam 1 unit usaha?

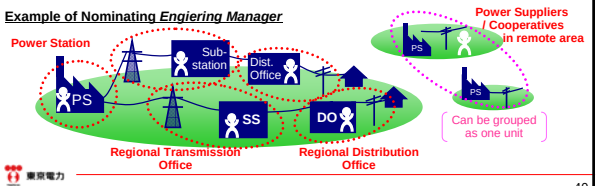
- Metoe penempatan tidak ditetapkan UU tetapi diatur oleh pelaku usaha dalam *Safety Rules*.
- Dalam metode penempatan *Engineering Manager*, dalam batas tertentu diserahkan pada kebijakan pelaku usaha itu sendiri, namun harus jelas tertulis dalam *Safety Rules* bagaimanakah penempatannya, dan sejauh mana ruang lingkup tugasnya.
- Bila DESDM menilai bahwa metode penempatan *Engineering Manager* tidak sesuai dengan ketetapan dalam *Safety Rules*, bisa menginstruksikan untuk merevisi *Safety Rules*.
- Sebagai patokan satuan unit usaha regional dimana seorang Engineerng Manager ditempatkan, seperti 1 titik pembangkit (memungkinkan beberapa titik pembangkit dijadikan satu lingkup dalam hal beberapa pembangkit sejenis terdapat di titik-titik berdekatan), unit usaha transmisi dan gardu atau distribusi di tingkat propinsi.

Engineering Manager System (Q3-8)

Q. Bila menempatkan *Engineering Manager* dalam suatu koperasi penyediaan tenaga listrik skala kecil, bukankah sulit menyediakan SDM yang dapat menanganinya?

- Bisa ditangani dengan membuat kontrak kerja dengan pihak luar yang memiliki sertifikasi sebagai *Engineering Manager*.
- Jadi, seorang *Engineering Manager* bisa pula menangani beberapa tempat dengan terikat kontrak dengan beberapa kelompok penyediaan tenaga listrik dan pelaku usaha beda pula, serta pelaku usaha skala kecil di pulau luar.

Example of Nominating *Engiering Manager*



Engineering Manager System (Q3-9)

Q. Bila terjadi kecelakaan akibat kelalaian tugas *Engineering Manager*, atau setelah diinvestigasi ditemukan adanya hal tersebut, apakah akan diberlakukan sanksi?

- Bila DESDM menilai adanya masalah dalam pelaksanaan tugas yang diberikan kepada *Engineering Manager*, diberlakukan sanksi berupa pencabutan sertifikat *Engineering Manager*.
- Pelaku usaha yang telah menugaskan *Engineering Manager* tersebut harus menugaskan *Engineering Manager* baru sebagai penggantinya.

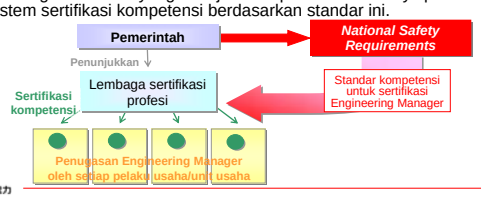
Engineering Manager System (Q3-10)

Q. Bagaimanakah menentukan honor bagi pihak yang telah ditugaskan sebagai *Engineering Manager*?

- Standar honor bagi *Engineering Manager* ditetapkan sesuai kebijakan pelaku usaha yang menugaskannya dan tidak diatur dalam regulasi secara khusus.

Outline - Standar kompetensi untuk *Engineering Manager*

- Dalam melaporkan penugasan *Engineering Manager* kepada pemerintah, pelaku usaha dituntut untuk menunjukkan kepemilikan sertifikasi kompetensi tertentu yang telah diterbitkan oleh lembaga sertifikasi yang ditunjuk pemerintah.
- Dalam hal ini, standar kompetensi teknis untuk sertifikasi Engineering Manager disiapkan oleh pemerintah. Standar ini tersistem dan berfokus pada penilaian terhadap pelaksanaan tugas-tugas pengawasan yang diperlukan guna memelihara keselamatan instalasi sebagaimana ditetapkan dalam *National Safety Requirements*.
- Lembaga sertifikasi yang ditunjuk oleh pemerintah menyiapkan sistem sertifikasi kompetensi berdasarkan standar ini.



Standar kompetensi untuk *Engineering Manager* (Q4-1)

Q. Selain standar kompetensi untuk *Engineering Manager* yang diusulkan kali ini, apakah standar kompetensi untuk manajer lain (Operation Manager, Maintenance Manager etc.) tidak ditentukan?

- Tidak. Alasannya:
  1. Proyek JICA kali ini akan menetapkan syarat kompetensi yang diperlukan oleh pihak yang terkait dengan tugas tersebut dengan mengusulkan pembuatan *Engineering Manager* System untuk memastikan posisi tanggung jawab terkait keselamatan instalasi.
  2. Namun standar kompetensi *Engineering Manager* yang telah diusulkan kali ini dapat dijadikan acuan atau dasar dalam penyusunan standar kompetensi untuk manager umum lainnya.

Standar kompetensi untuk *Engineering Manager* (Q4-2)

Q. Apakah standar kompetensi untuk inspektor pemerintah ditetapkan?

- Tidak. Alasannya:
  1. Sebagaimana Q1, dalam proyek JICA kali ini masalah penetapan standar kompetensi untuk inspektor tidak menjadi target.

Standar kompetensi untuk *Engineering Manager* (Q4-3)

Q. Ingin tahu jadwal pemberlakuan standar kompetensi

- Saat ini draft standar kompetensi yang telah diusulkan oleh JICA sedang dipelajari dan dipertimbangkan secara seksama oleh para pihak di Indonesia.
- Standar kompetensi yang telah diselesaikan akan dimintakan persetujuan kepada pemerintah, kemudian menetapkan lembaga sertifikasi dan menyiapkan sistem kualifikasi sehingga diperkirakan perlu mengerjakan desain sistem paling cepat pada akhir 2010.
- Detilnya akan dipertimbangkan oleh DESDM di kemudian hari.

Standar kompetensi untuk *Engineering Manager* (Q4-4)

Q. Ditetapkan bahwa harus menugaskan *Engineering Manager* yang telah memperoleh sertifikasi kompetensi. Bukankah sulit untuk mendapatkan sertifikasi kompetensi baru dengan cepat?

- Bila berfokus pada pelaksanaan sertifikasi dengan melakukan pengujian terhadap calon-calon dalam jumlah besar saat mengadopsi *Engineering Manager* System secara serentak, mungkin akan menimbulkan kebingungan.
- Bisa dilakukan dengan masa transisi misalnya melalui pemberian sertifikasi sementara di awal yang berlaku hanya beberapa tahun saja kepada mereka yang memiliki pengalaman tertentu, kemudian secara bertahap berpindah ke sertifikasi resmi melalui pengujian dll.
- Detilnya akan dipertimbangkan oleh DESDM di kemudian hari.

Standar kompetensi untuk *Engineering Manager* (Q4-5)

Q. Standar kompetensi yang telah diusulkan kali ini tampaknya dikhususkan pada syarat kompetensi secara teknis. Apakah kemampuan lain non-teknis, seperti kemampuan membimbing selaku manajer, dll tidak dipertanyakan?

- Standar kompetensi yang telah diusulkan kali ini ditetapkan dari poin untuk mengevaluasi apakah memiliki kemampuan yang mumpuni untuk melaksanakan tugas *Engineering Manager* yang ditetapkan dalam regulasi sehingga dikhususkan pada syarat teknis.

Standar kompetensi untuk *Engineering Manager* (Q4-6)

Q. Dalam mengemban tugas *Engineering Manager*, dituntut pengalaman kerja yang sesuai. Apakah boleh ditetapkan hanya berdasarkan ujian saja?

- Memungkinkan melalui ujian tulis atau pendidikan/pengalaman tertentu
- Dalam sistem sertifikasi teknisi di Jepang menitikberatkan pada pengecekan pengetahuan melalui ujian tulis, sedangkan di Indoneisa bisa disesuaikan dengan sistem umum seperti pemastian pengalaman kerja, ujian lisan melalui wawancara, rekomendasi atasan, dll.
- Namun demikian, ujian tulis dianggap yang terbaik dalam mengevaluasi kemampuan secara obyektif sehingga ujian tulis diharapkan sebagai salah satu metode evaluasi. Tetapi mengingat pentingnya tugas *Engineering Manager*, maka tingkat kesulitan ujian harus diperketat.

Standar kompetensi untuk *Engineering Manager* (Q4-7)

Q. Siapakah yang melakukan sertifikasi kompetensi dalam standar teknis *Engineering Manager*?

- Organisasi sertifikasi yang melakukan sertifikasi kompetensi untuk standar teknis yang ada saat ini (IATKI、HAKIT、GEMA PDKB、HATEKDIS) dianggap sebagai calon yang paling mampu.
- Detilnya akan dipertimbangkan oleh DESDM di kemudian hari.

Standar kompetensi untuk *Engineering Manager* (Q4-8)

Q. Siapakah yang menetapkan standar sertifikasi untuk standar kompetensi *Engineering Manager* dan level lulus/tidaknya?

- Patokannya standar konpetensi. Implementasinya sedang dalam proses pertimbangan dan akan ditetapkan oleh DESDM dengan mempertimbangkannya bersama lembaga sertifikasi kompetensi dan para pihak terkait lainnya.

Standar kompetensi untuk *Engineering Manager* (Q4-9)

Q. Apakah standar kompetensi *Engineering Manager* ini berlaku tanpa batas waktu atau ada masa berlakunya?

- Apabila telah diperoleh sekali akan menjadi sertifikasi permanen.
- Namun perlu disediakan wadah penukaran dan penyedian informasi yang berkaitan dengan contoh kasus kecelakaan, tindakan proventif, perkembangan teknolgi dll melalui lokakarya, tinjauan lapangan dll.

III. Action Plan for MEMR after the completion of the Study

National Safety Requirements

Action 1: Legislation of *National Safety Requirements*

Recommended Action [and period]

- Completion of the Governmental Regulation [by September 2010]
- Development of the new Ministerial Decree [by September 2010]
- Hosting a forum / seminar / workshop for related stakeholders to share understanding [by September 2010]
- Distribution of edification brochure (based on the draft prepared by the Study Team) [by September 2010]

National Safety Requirements (cont'd)

Action 2: *Developing implementation guidelines to supplement National Safety Requiements*

Recommended Action [and period]

- Development of Implementation Guidelines of *National Safety Requirements* with more specific criteria [by December 2011]
- Completion of SNI/PUIL to cover the entire facilities related to electrical power supply [by December 2011]

Safety Rules

Action 1: Legislation of *Safety Rules*

Recommended Action [and period]

[Likewise with *National Safety Requirements*]

- Completion of the Governmental Regulation [by September 2010]
- Development of the new Ministerial Decree [by September 2010]
- Hosting a forum / seminar / workshop for related stakeholders to share understanding [by September 2010]
- Distribution of edification brochure (based on the draft prepared by the Study Team) [by September 2010]

Safety Rules (cont'd)

Action 2: Developing guidelines to specify *Safety Rules*

Recommended Action [and period]

- Determining the roles of the Government and utilities in developing *Safety Rules* [by September 2010]
- Developing a detailed guidelines to define the specification of *Safety Rules* system (as well as providing a template of *Safety Rules*) [by December 2011]

Safety Rules (cont'd)

Action 3: Roadmap for full adoption of *Safety Rules* system

Recommended Action [and period]

- Determine the period and targeted facilities for implementation [by June 2010]

Action 4: Further expanding the target of Safety Rules as next steps in the future

Recommended Action [and period]

- Discussion for applying *Safety Rules* system to power users' facilities and captive power [after 2011]

Engineering Manager System

Action 1: Legislation of *Engineering Manager* system

Recommended Action [and period]

[Likewise with *National Safety Requirements & Safety Rules*]

- Completion of the Governmental Regulation [by September 2010]
- Development of the new Ministerial Decree [by September 2010]
- Hosting a forum / seminar / workshop for related stakeholders to share understanding [by September 2010]
- Distribution of edification brochure (based on the draft prepared by the Study Team) [by September 2010]

Engineering Manager System (cont'd)

Action 2: Developing guidelines to specify *Engineering Manager* system

Recommended Action [and period]

- Developing a guidelines (templates) to define the roles and responsibilities of *Engineering Manager* [by December 2011]

<Appendix> Main Tasks of *Engineering Manager* (proposed)

Construction

1. Supervision on facility construction plan;
2. Assessing the conformity of construction designing to *National Safety Requirements;*
3. Site investigation during construction works;
4. Inspection before commissioning;

Operation

1. Development of annual activity plan on safety management;
2. Supervision on submission of application / notification documents to the authority;
3. Supervision and assessment of safety rules and manuals;
4. Planning and implementation of safety education
5. Attendance at meetings related to safety management

Maintenance

1. Assessment of the condition of facilities in operation (site investigation)
2. Assessment of safety management
3. Supervision on the revision of site patrol policy
4. Measures against abnormalities and/or accidents/troubles
5. Cooperation with statutory inspection carried out by the Inspector

Engineering Manager System (cont'd)

Action 3: Roadmap for full adoption of *Engineering Manager* System

Recommended Action [and period]

[Likewise with *Safety Rules*]

- Determine the period and targeted facilities for implementation [by June 2010]

Action 4: Further expanding the target of *Engineering Manager* System as next steps in the future

Recommended Action [and period]

[Likewise with Safety Rules]

- Discussion for applying *Engineering Manager* system to power users' facilities and captive power [after 2011]

Standar kompetensi untuk *Engineering Manager*

Action 1: Completion of the list of Competency Units

Recommended Action [and period]

- Completion of the entire list of Competency Units following the receipt of the 1st draft provided by the JICA Study Team [by December 2010]

Action 2: Taking necessary procedures for authorization

Recommended Action [and period]

- Gaining approval within MEMR [by June 2011]

Standar kompetensi untuk *Engineering Manager*

Action 3: Developing the institutional scheme of certifying *Engineering Manager*

Recommended Action [and period]

- Determining the entities to undertake certification [by December 2011]
- Assisting the aforementioned entities in developing certification system [by December 2011]
- Concluding an agreement with the aforementioned entities to entrust the certification [by December 2011]
- Establish a section within MEMR to license Engineering Manager [by December 2011]

Standar kompetensi untuk *Engineering Manager*

Action 4: Developing the institutional scheme of certifying *Engineering Manager*

Recommended Action [and period]

- Estimating the workload for certifying all potential applicants [by Septermber 2010]
- Determining the transitional period before full adoption [by Septermber 2010]
- Hosting a forum / seminar / workshop & developing edification brochure (when needed) [by Septermber 2010]