

## 2.4 運用例集

### 2.4.1 最近の日本における新技術の導入事例（配電地理情報システムの開発・導入）

#### (1) 概要

今回、開発・導入した配電地理情報システムは、電子化された地図と地図上に描かれた配電設備や工事予定の情報を一元的に管理するとともに、ビジュアルな提供が可能となったことから、ノートパソコン上で、計画・運用・保守・設備管理など全般に亘る配電業務が一元的に実施できることになり、業務の効率化やお客様サービス向上など、多方面にわたって効果が期待できるシステムであり、各々の業務を支援するため以下の個別システムから構成されている。

#### (a) 図面管理システム

従来、紙ベースで管理していた配電設備管理図を電子データ化し、

- ✓ 配電線増強工事完了後に設計図面に基づき配電設備管理図をコンピュータ処理により自動更新する機能
- ✓ ノートパソコンから配電線路図や設備内容（電線サイズ、電線亘長、支持物種別など）を照会する機能を持っている。

#### (b) 架空線設計システム

電子データ化された配電設備管理図上で、設計内容を入力しコンピュータ処理により設計図面を作成する機能および、簡易な工事については経済性を考慮した、最適な設計図面を自動的に作成する機能を持っている。

#### (c) 装柱写真管理システム

工事完了後にデジタルカメラ等により現場で撮影した支持物の装柱写真をノートパソコンから登録・照会する機能を持っている。

#### (d) 停電情報表示システム

配電線を遠隔監視制御している配電自動化システムから配電地理情報システムに、停電情報をリアルタイムに連携し、ノートパソコンから停電事故内容、停電地域を照会する機能を持っている。

#### (2) システムの特徴

- ◆ 電子化された地図上で、設備情報や設計・工事情報を管理することにより、工事受付から設計、図面管理等の設備建設に係る業務や、停電地域・伐採個所管理等の運用・保守業務を1つのシステムで支援できる
- ◆ 開発期間の短縮や開発費用の削減を図るため、PCサーバの採用や市販のパッケージソフトウェア、アプリケーションソフトウェアを活用した。

#### (3) 技術水準

- ◆ 他社からシステムの機能、構成、適用状況等について照会があり、システムの採用または、同種システムの開発が検討されている。
- ◆ 社内の営業部、情報システム部においても、電子地図を活用した「集中受付センター

システム]、「通信設備管理システム」を運用しており高い評価を得ている。

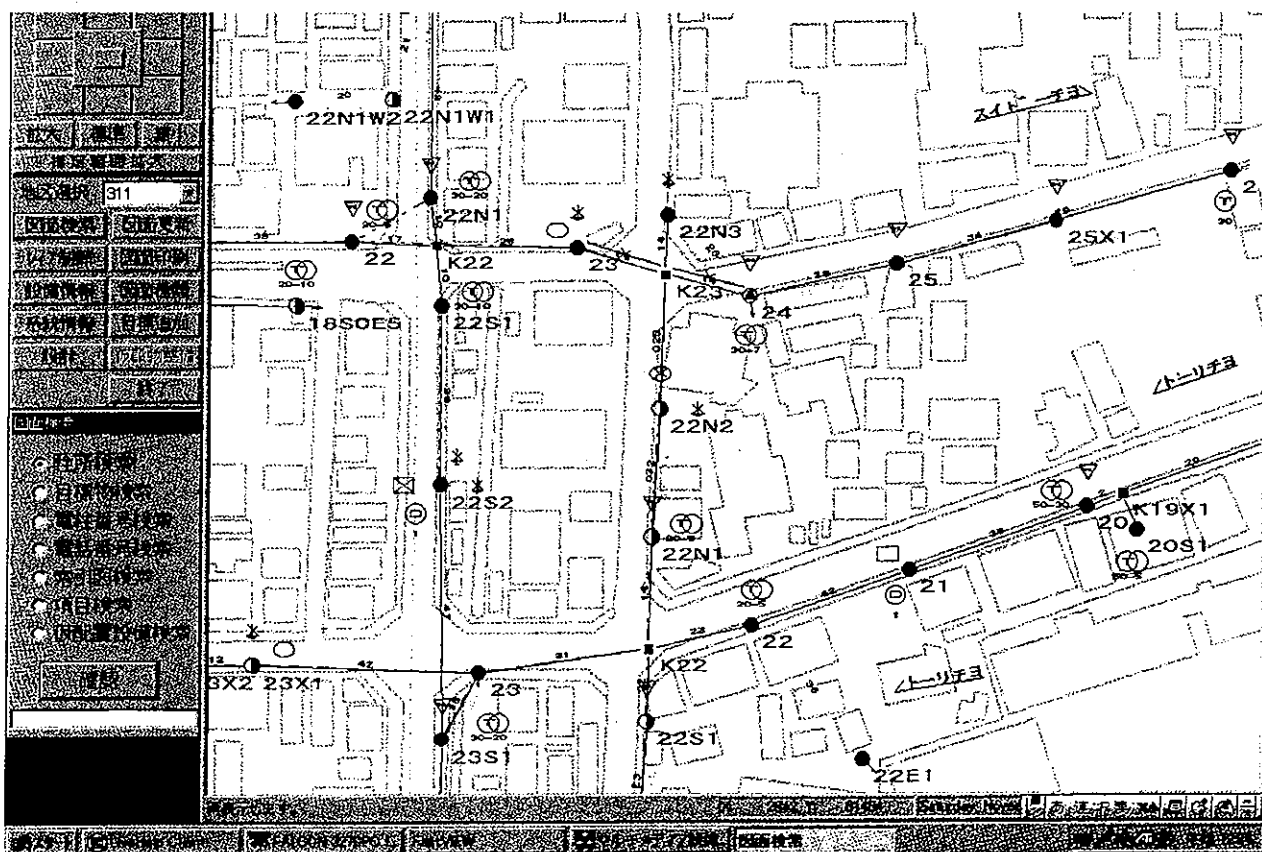
#### (4) 効果

- ◆ 工事に伴う配電設備管理図の修正は、あらかじめインプットされているデータをもとに工事完了後に、設計図面をもとにコンピュータ処理により自動的に行えるため図面修正作業の省力化が図れる
- ◆ 配電設備管理図から地域別、変電所別等必要に応じた高圧配電線系統図を自動的に作成できるため、各種系統図の重複した修正が不要になるとともに図面精度の向上が図れる
- ◆ 電子化された設備図面上で、設備シンボルを配置・修正しながら平面図・装柱図などの設計図面を作成することにより、設計図面作成業務の省力化が図れる
- ◆ 簡易な工事設計には、自動作成された設計図面や装柱写真を利用することにより、現場確認を省略できるので設計業務の効率化が図れる
- ◆ お客様からの作業停電予定日等の問い合わせに対して、電子地図上で迅速容易に予定日等の把握ができるため、お客様サービスの向上が図れる
- ◆ 配電設備管理図などは、紙図面を廃止し電子化するためペーパーレス化が図れる
- ◆ 電子化された地図上に記載されている設備、工事予定、お客様情報等を関係個所で共有できる

# 配電地理情報システムとは

配電地理情報システムとは、電子化された地図と地図上に描かれた配電設備や工事予定等の情報を一元的に管理するとともに、ビジュアルに提供できるため設計業務の効率化やお客さまサービスの向上など、多方面にわたって効果が期待できるシステムです。

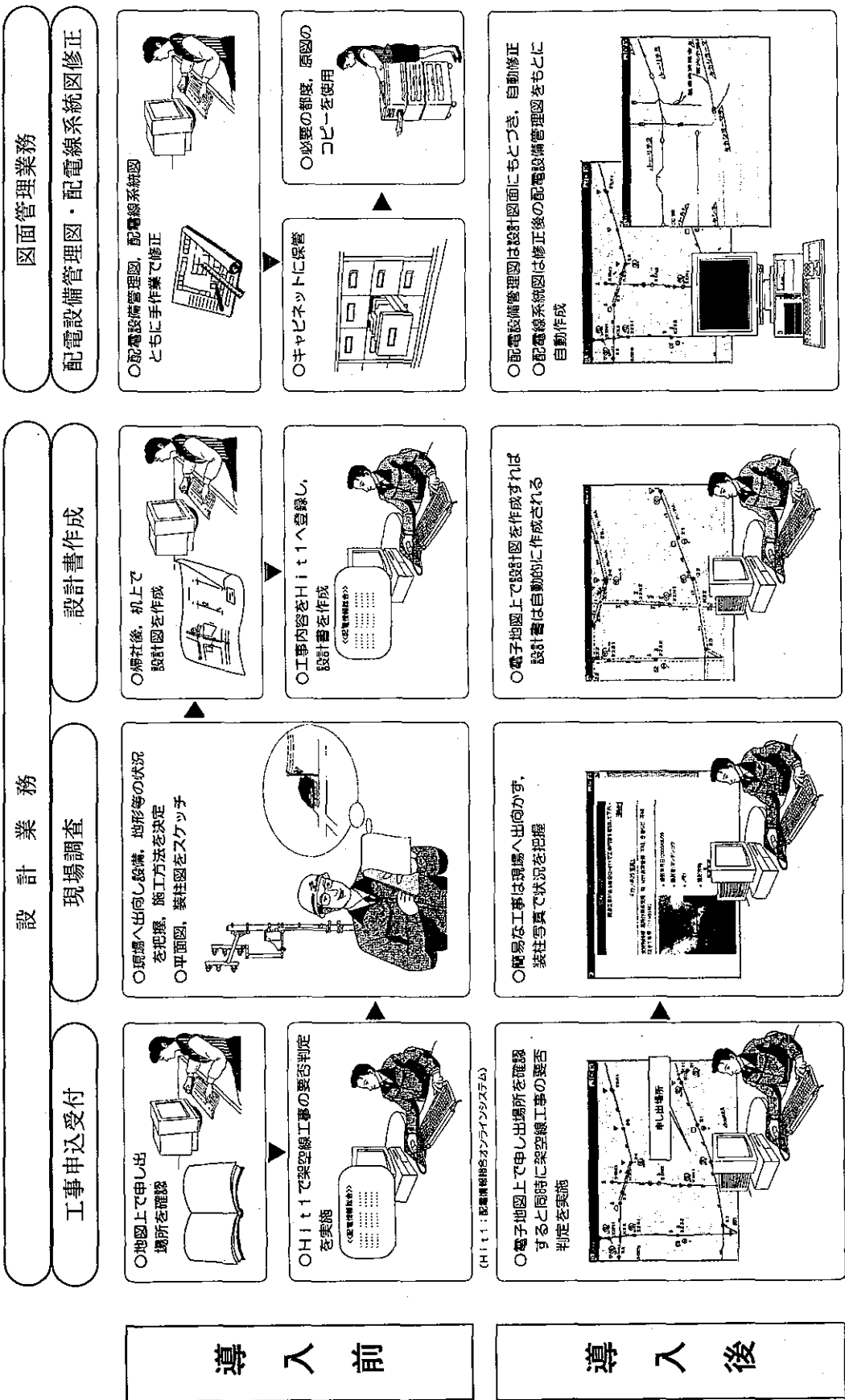
● *HiGIS : Haiden Geographic Information System*



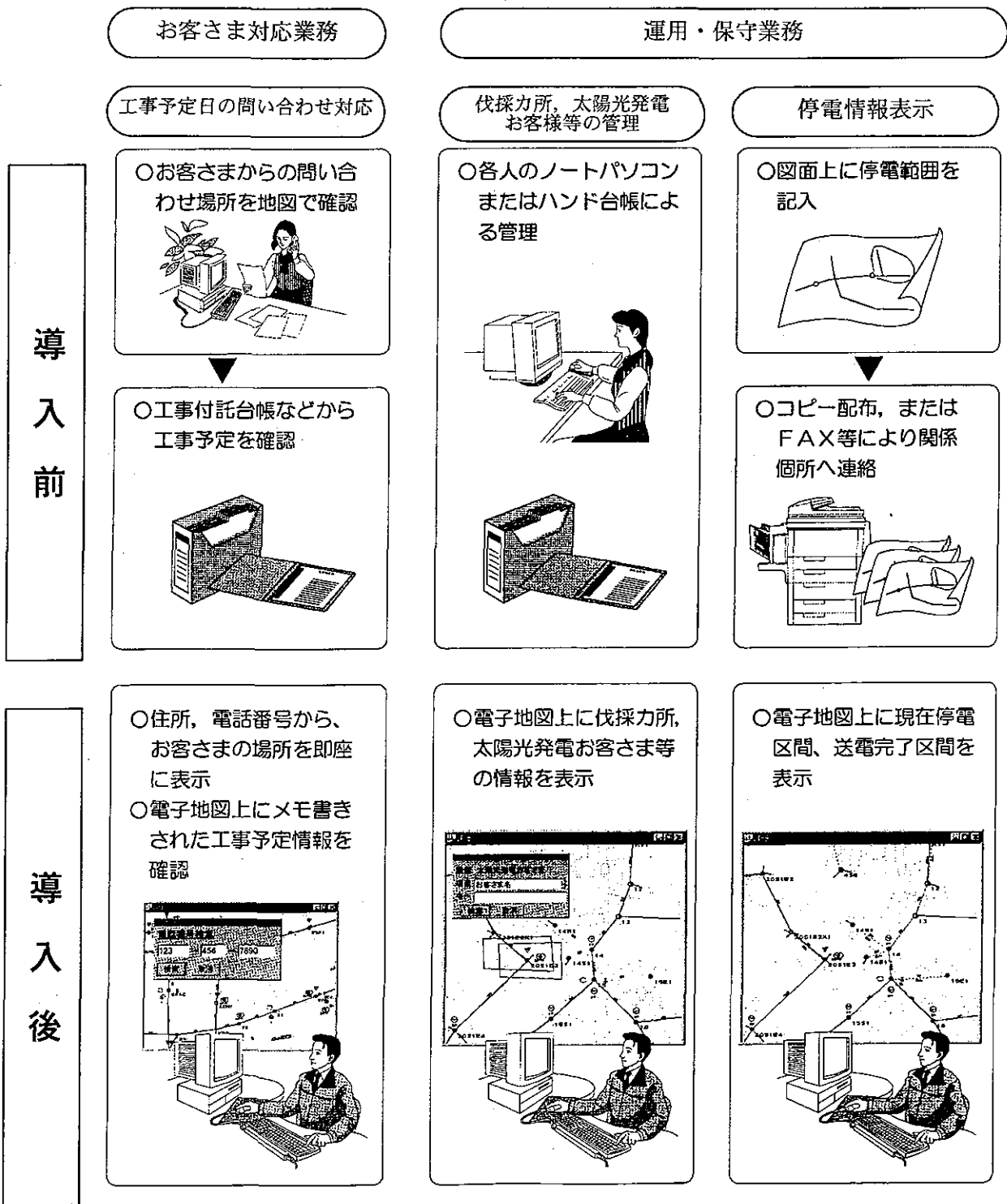
クライアントマシン外観



# 業務の概要(新旧比較)



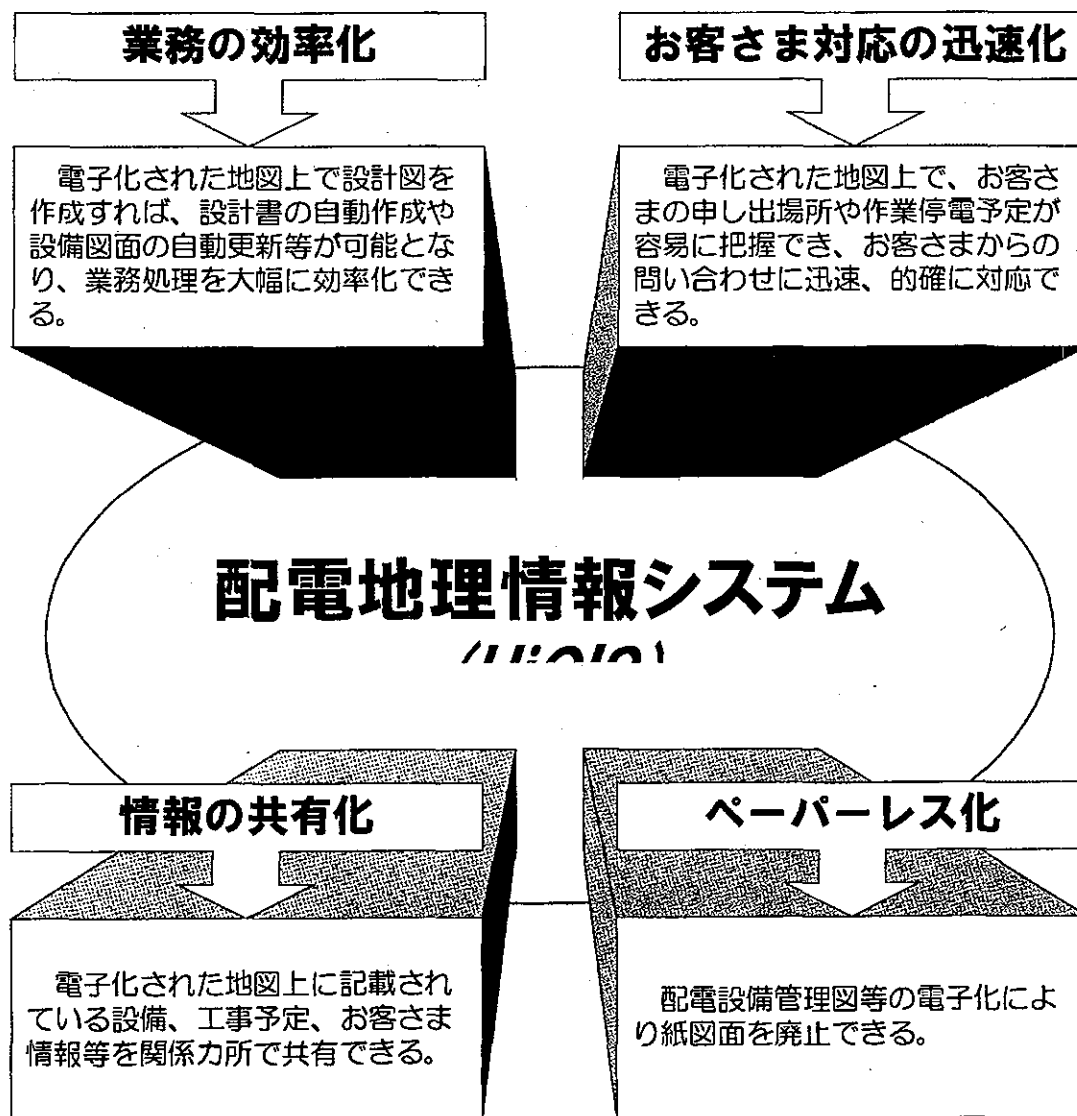
# 業務の概要（新旧比較）



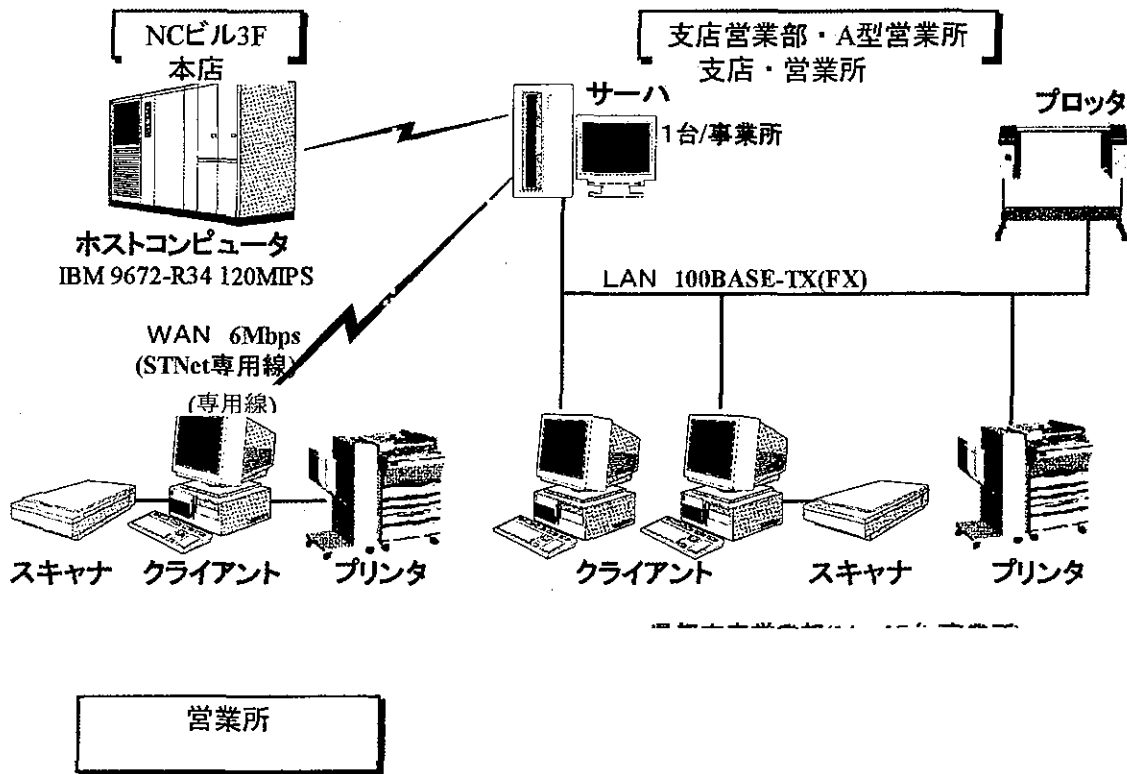
## システムの特徴

- 電子化された地図上で、設備情報や設計・工事情報を管理することにより、工事受付から設計、図面管理等の設備建設に係る業務や、停電地域・伐採力所管理等の運用・保守業務を1つのシステムで支援できる。
- 開発期間の短縮や開発費用の削減を図るため、PCサーバの採用や市販のパッケージソフトウェア、アプリケーションソフトウェアを活用した。

## システム化の効果



# システム構成



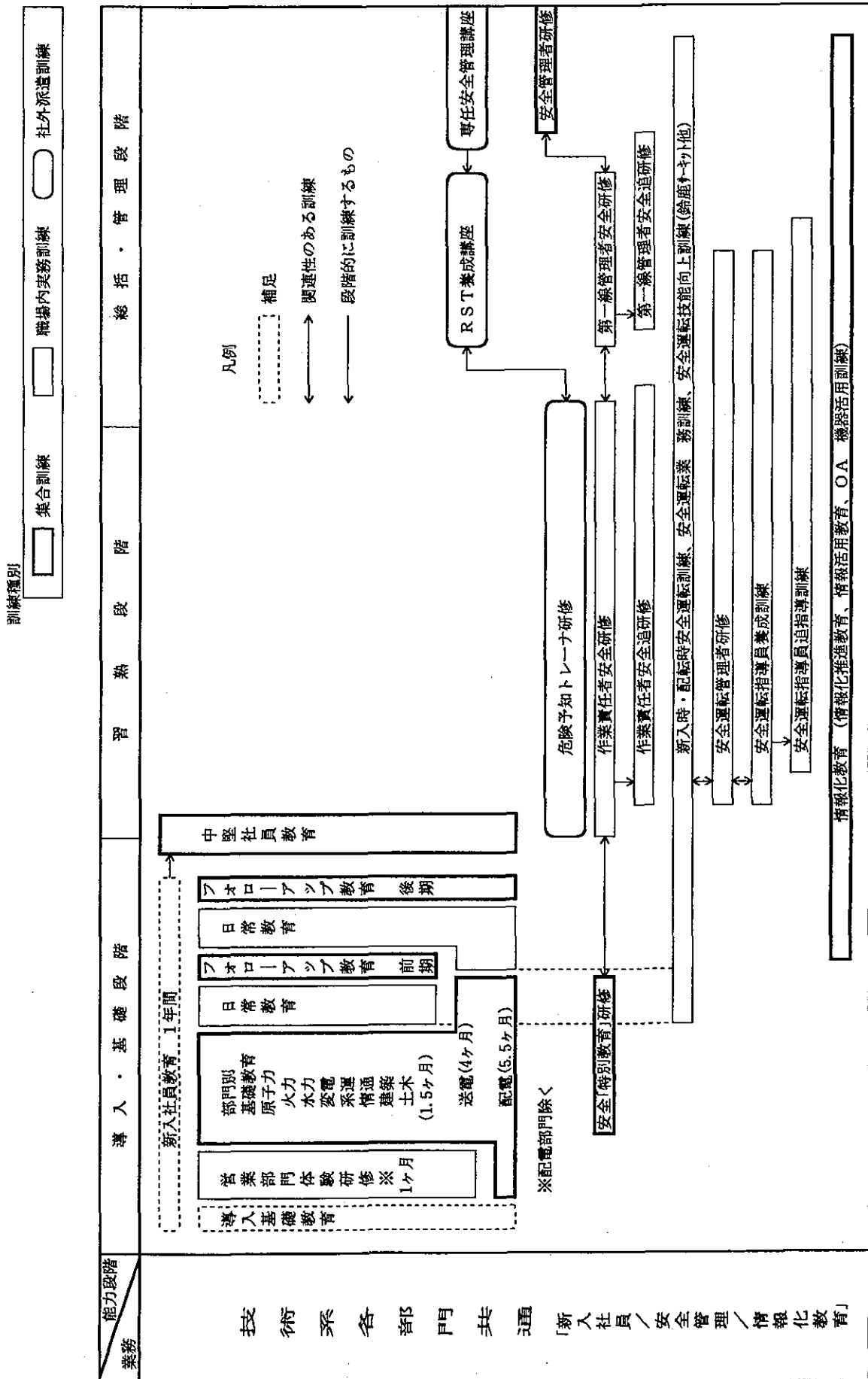
## 機器仕様

サーバ	CPU : PentiumⅢ Xeon 550MHz×2 メモリ : 640MB HDD : 27GB
クライアント	CPU : PentiumⅢ 800MHz メモリ : 128MB HDD : 10GB ディスプレイ : 17インチ
プリンタ	A3カラーレーザプリンタ 解像度 : 600dpi 印刷速度 : A3モノクロ 12P/分 A3カラー 3P/分
プロッタ	A0カラープロッタ 解像度 : 360dpi×360dpi, 720dpi×720dpi 印刷速度 : 360dpi標準モード A0フルカラー 1P/4分
スキャナ	解像度 : 400dpi (A4) , 400dpi, 1600dpi (A3)

## 2.5 人材育成など

### 2.5.1 教育訓練体系





業務	導入・基礎段階	習熟段階	総括・管理段階
<p>西己 質電 育即 門可 共夫 通</p>	<p><b>新人社員教育</b></p> <ul style="list-style-type: none"> <li>・高圧配電線の作業がとて、通常の配電線の作業と異なる点</li> <li>・安全な作業を行うための知識・技能の習得</li> <li>・内外線設計業務の基本的知識の習得</li> </ul> <p><b>新人社員教育</b></p> <ul style="list-style-type: none"> <li>・高圧配電線の作業がとて、通常の配電線の作業と異なる点</li> <li>・安全な作業を行うための知識・技能の習得</li> <li>・内外線設計業務の基本的知識の習得</li> </ul> <p><b>安全特別教育</b></p> <ul style="list-style-type: none"> <li>・高圧配電線の作業</li> <li>・緊急時における作業</li> <li>・ルーン取付けの業務</li> <li>・玉掛けの業務</li> <li>・伐木等の業務</li> <li>・チェーンソー取扱業務</li> </ul> <p><b>高圧作業車運転技能講習</b></p> <ul style="list-style-type: none"> <li>・運転免許(二輪)取得講習</li> </ul>	<p><b>日常教育</b></p> <ul style="list-style-type: none"> <li>・作業頻度の高い車種</li> <li>・作業が安全に行える</li> <li>・技能が習得の容易な作業</li> <li>・損傷が少なくなるよう</li> <li>・適当な知識・技能を習得</li> </ul> <p><b>フォローアップ教育</b></p> <ul style="list-style-type: none"> <li>・高圧A種活線技術研修</li> <li>・高圧B種活線技術研修</li> <li>・高圧C種活線技術研修</li> <li>・高圧D種活線技術研修</li> <li>・高圧E種活線技術研修</li> <li>・高圧F種活線技術研修</li> <li>・高圧G種活線技術研修</li> <li>・高圧H種活線技術研修</li> <li>・高圧I種活線技術研修</li> <li>・高圧J種活線技術研修</li> <li>・高圧K種活線技術研修</li> <li>・高圧L種活線技術研修</li> <li>・高圧M種活線技術研修</li> <li>・高圧N種活線技術研修</li> <li>・高圧O種活線技術研修</li> <li>・高圧P種活線技術研修</li> <li>・高圧Q種活線技術研修</li> <li>・高圧R種活線技術研修</li> <li>・高圧S種活線技術研修</li> <li>・高圧T種活線技術研修</li> <li>・高圧U種活線技術研修</li> <li>・高圧V種活線技術研修</li> <li>・高圧W種活線技術研修</li> <li>・高圧X種活線技術研修</li> <li>・高圧Y種活線技術研修</li> <li>・高圧Z種活線技術研修</li> </ul> <p><b>必要により 新入社員も実施</b></p> <ul style="list-style-type: none"> <li>・運転免許(大型)取得講習</li> <li>・4級小型船舶操縦士免許取得講習</li> <li>・危険物取扱者(乙種第4類)講習</li> </ul> <p><b>高圧作業車運転技能講習</b></p> <ul style="list-style-type: none"> <li>・小型移動式ルーン運転技能講習</li> <li>・玉掛け技能講習</li> <li>・第一種電気工事士資格取得講習</li> <li>・第二種電気工事士資格取得講習</li> <li>・第三種電気工事士資格取得講習</li> <li>・第四種電気工事士資格取得講習</li> <li>・第五種電気工事士資格取得講習</li> <li>・第六種電気工事士資格取得講習</li> <li>・第七種電気工事士資格取得講習</li> <li>・第八種電気工事士資格取得講習</li> <li>・第九種電気工事士資格取得講習</li> <li>・第十種電気工事士資格取得講習</li> <li>・第十一種電気工事士資格取得講習</li> <li>・第十二種電気工事士資格取得講習</li> <li>・第十三種電気工事士資格取得講習</li> <li>・第十四種電気工事士資格取得講習</li> <li>・第十五種電気工事士資格取得講習</li> <li>・第十六種電気工事士資格取得講習</li> <li>・第十七種電気工事士資格取得講習</li> <li>・第十八種電気工事士資格取得講習</li> <li>・第十九種電気工事士資格取得講習</li> <li>・第二十種電気工事士資格取得講習</li> <li>・第二十一種電気工事士資格取得講習</li> <li>・第二十二種電気工事士資格取得講習</li> <li>・第二十三種電気工事士資格取得講習</li> <li>・第二十四種電気工事士資格取得講習</li> <li>・第二十五種電気工事士資格取得講習</li> <li>・第二十六種電気工事士資格取得講習</li> <li>・第二十七種電気工事士資格取得講習</li> <li>・第二十八種電気工事士資格取得講習</li> <li>・第二十九種電気工事士資格取得講習</li> <li>・第三十種電気工事士資格取得講習</li> <li>・第三十一種電気工事士資格取得講習</li> <li>・第三十二種電気工事士資格取得講習</li> <li>・第三十三種電気工事士資格取得講習</li> <li>・第三十四種電気工事士資格取得講習</li> <li>・第三十五種電気工事士資格取得講習</li> <li>・第三十六種電気工事士資格取得講習</li> <li>・第三十七種電気工事士資格取得講習</li> <li>・第三十八種電気工事士資格取得講習</li> <li>・第三十九種電気工事士資格取得講習</li> <li>・第四十種電気工事士資格取得講習</li> <li>・第四十一種電気工事士資格取得講習</li> <li>・第四十二種電気工事士資格取得講習</li> <li>・第四十三種電気工事士資格取得講習</li> <li>・第四十四種電気工事士資格取得講習</li> <li>・第四十五種電気工事士資格取得講習</li> <li>・第四十六種電気工事士資格取得講習</li> <li>・第四十七種電気工事士資格取得講習</li> <li>・第四十八種電気工事士資格取得講習</li> <li>・第四十九種電気工事士資格取得講習</li> <li>・第五十種電気工事士資格取得講習</li> <li>・第五十一種電気工事士資格取得講習</li> <li>・第五十二種電気工事士資格取得講習</li> <li>・第五十三種電気工事士資格取得講習</li> <li>・第五十四種電気工事士資格取得講習</li> <li>・第五十五種電気工事士資格取得講習</li> <li>・第五十六種電気工事士資格取得講習</li> <li>・第五十七種電気工事士資格取得講習</li> <li>・第五十八種電気工事士資格取得講習</li> <li>・第五十九種電気工事士資格取得講習</li> <li>・第六十種電気工事士資格取得講習</li> <li>・第六十一種電気工事士資格取得講習</li> <li>・第六十二種電気工事士資格取得講習</li> <li>・第六十三種電気工事士資格取得講習</li> <li>・第六十四種電気工事士資格取得講習</li> <li>・第六十五種電気工事士資格取得講習</li> <li>・第六十六種電気工事士資格取得講習</li> <li>・第六十七種電気工事士資格取得講習</li> <li>・第六十八種電気工事士資格取得講習</li> <li>・第六十九種電気工事士資格取得講習</li> <li>・第七十種電気工事士資格取得講習</li> <li>・第七十一種電気工事士資格取得講習</li> <li>・第七十二種電気工事士資格取得講習</li> <li>・第七十三種電気工事士資格取得講習</li> <li>・第七十四種電気工事士資格取得講習</li> <li>・第七十五種電気工事士資格取得講習</li> <li>・第七十六種電気工事士資格取得講習</li> <li>・第七十七種電気工事士資格取得講習</li> <li>・第七十八種電気工事士資格取得講習</li> <li>・第七十九種電気工事士資格取得講習</li> <li>・第八十種電気工事士資格取得講習</li> <li>・第八十一種電気工事士資格取得講習</li> <li>・第八十二種電気工事士資格取得講習</li> <li>・第八十三種電気工事士資格取得講習</li> <li>・第八十四種電気工事士資格取得講習</li> <li>・第八十五種電気工事士資格取得講習</li> <li>・第八十六種電気工事士資格取得講習</li> <li>・第八十七種電気工事士資格取得講習</li> <li>・第八十八種電気工事士資格取得講習</li> <li>・第八十九種電気工事士資格取得講習</li> <li>・第九十種電気工事士資格取得講習</li> <li>・第九十一種電気工事士資格取得講習</li> <li>・第九十二種電気工事士資格取得講習</li> <li>・第九十三種電気工事士資格取得講習</li> <li>・第九十四種電気工事士資格取得講習</li> <li>・第九十五種電気工事士資格取得講習</li> <li>・第九十六種電気工事士資格取得講習</li> <li>・第九十七種電気工事士資格取得講習</li> <li>・第九十八種電気工事士資格取得講習</li> <li>・第九十九種電気工事士資格取得講習</li> <li>・第一百種電気工事士資格取得講習</li> </ul>	<p><b>一般技術教育</b></p> <ul style="list-style-type: none"> <li>・電気工事作業指揮者研修</li> <li>・高圧A種活線技術研修</li> <li>・高圧B種活線技術研修</li> <li>・高圧C種活線技術研修</li> <li>・高圧D種活線技術研修</li> <li>・高圧E種活線技術研修</li> <li>・高圧F種活線技術研修</li> <li>・高圧G種活線技術研修</li> <li>・高圧H種活線技術研修</li> <li>・高圧I種活線技術研修</li> <li>・高圧J種活線技術研修</li> <li>・高圧K種活線技術研修</li> <li>・高圧L種活線技術研修</li> <li>・高圧M種活線技術研修</li> <li>・高圧N種活線技術研修</li> <li>・高圧O種活線技術研修</li> <li>・高圧P種活線技術研修</li> <li>・高圧Q種活線技術研修</li> <li>・高圧R種活線技術研修</li> <li>・高圧S種活線技術研修</li> <li>・高圧T種活線技術研修</li> <li>・高圧U種活線技術研修</li> <li>・高圧V種活線技術研修</li> <li>・高圧W種活線技術研修</li> <li>・高圧X種活線技術研修</li> <li>・高圧Y種活線技術研修</li> <li>・高圧Z種活線技術研修</li> </ul> <p><b>本局復旧工事技術研修</b></p> <ul style="list-style-type: none"> <li>・災害復旧訓練</li> <li>・配電自動化機器取扱訓練</li> <li>・地上設置機器取扱訓練</li> </ul> <p><b>配電地理情報システム(HGIS)研修</b></p> <ul style="list-style-type: none"> <li>・部門別HGIS教育(四電まなぶくん)</li> <li>・内線設計システム研修</li> </ul>

訓練種別

- 集合訓練
- 職場内実務訓練
- 社外派遣訓練

業務	能力段階	階 段			訓練種別
		導 入・基 礎	習 熟	管 理	
配電運用	電力段階		変配総合運用訓練		職場内実務訓練
			22kV配電塔取扱訓練		職場内実務訓練
			停電・被害状況連絡訓練		職場内実務訓練
			高調波抑制対策技術習得訓練		社外派遣訓練
			配電ミニコン操作員教育		社外派遣訓練
配電自動化	電力段階		開閉器遠装置操作員教育		職場内実務訓練
			遠制グループ・遠制子装置工事施工技術講習会		職場内実務訓練
			外線設計検査訓練		社外派遣訓練
配電工事	電力段階		地中線設計検査訓練		職場内実務訓練
			地中線設計支援ツリ操作教育		職場内実務訓練
			高調波抑制対策技術習得訓練		社外派遣訓練
			遠制グループ・遠制子装置工事施工技術講習会		職場内実務訓練
			地中線技術研修会		職場内実務訓練
			地山の掘削作業主任者技能講習		社外派遣訓練
			土止め支保工作業主任者技能講習		社外派遣訓練
			型わく支保工の組立て等作業主任者技能講習		社外派遣訓練
			足場組立て等作業主任者技能講習		社外派遣訓練
			地中配電セミナー		社外派遣訓練

能力段階 業務	導入・基礎段階	習熟段階	総括・管理段階
配電工事	<div style="border: 1px solid black; padding: 2px;">内線調査訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">配電設備訓練</div>	<div style="border: 1px solid black; padding: 2px;">引込線・内線設計検査訓練</div>	
		<div style="border: 1px solid black; padding: 2px;">巡視・点検・測定訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">伐採業務訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">外線設計検査訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">引込線・内線設計検査訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">内線検査訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">配電設備訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">変配総合運用訓練</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">22kV配電塔取扱訓練</div>	
配電保			
			<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> <li>・ 鉄骨の組立て等作業主任者技能講習</li> <li>・ フォークリフト運転技能講習</li> <li>・ 車両系建設機械（基礎工事用）運転技能講習</li> </ul> </div>
配電用地			<div style="border: 1px solid black; padding: 2px; margin-top: 10px;">配電用新築地調査訓練</div>

訓練種別

- 集合訓練
- 職場内実務訓練
- 社外派遣訓練

## 2.5.2 作業安全

配電設備の設計，建設，保守点検，修理，事故復旧等の作業に当たって，作業員と一般公衆の安全を確保するため，労働安全衛生法，同施行令等の定めに基づき，配電作業に従事するものが守らなければならない基本的事項を定めている。以下，その主なものについて述べる。

### (1) 作業指揮者

配電作業を行うため，2名以上で班を編成する場合は，作業員を掌握・指揮・監督し，作業安全の遂行に責任をもつ作業指揮者を指名する。なお，作業指揮者は，所定の研修を受けたものとする。

### (2) 高所作業

#### (a) 柱上安全帯の使用

高所作業とは，通常高さ 2m 以上の個所で行う作業のことをいい，この場合，墜落の危険の恐れがあるときは，柱上安全帯および無墜落補助ロープを使用する。

#### (b) 補助ロープの使用

配電作業における昇降柱時および柱上作業時において，胴綱を掛け替える場合は，必ず補助ロープを使用するものとし，柱上作業時は，柱上帯と補助ロープを必ず併用する。

#### (c) 昇降柱

昇降柱は，単独作業の場合を除き，作業指揮者または作業指揮者が指名した監視員の監視のもとに呼称確認しながら行う

昇柱時には，電柱をはじめ金属体に漏電していないか検電器により，検電しながら昇柱する

### (3) 活線作業および活線近接作業

#### (a) 活線作業班の編成

高圧活線（近接）作業は，原則として，3名以上で実施し，一般的には作業指揮者，活線（近接）作業員，柱上作業員で構成する。

#### (b) 作業着手前の措置

作業指揮者は，出発前および使用前に絶縁用保護具，防具，活線工具を点検し，完全であることを確認するとともに，作業着手前に班員全員に作業分担，作業内容，作業方法等について説明しておく。

#### (c) 高圧活線作業

##### (i) 絶縁用保護具の着用

防護作業および高圧活線作業を行うときは，安全帽，高圧用絶縁手袋，絶縁衣および絶縁長靴を着用する。

##### (ii) 防具の装着

高圧充電電路に対する防具の装着範囲は，以下のとおり。

- 作業員が柱上の作業位置に立って身体を伸ばし、金属性の工具を持って手を高く挙げたときの工具の先端に少なくとも上方距離 30cm を加えた範囲内の充電電路
- 作業員が柱上の作業位置で胴網をかけて身体を反らし、金属性の工具を手を持って横に伸ばしたときの工具の先端に少なくとも側方 60cm を加えた範囲内の充電電路
- 誤って足を滑らせたとき身体の前部に少なくとも下方 60cm を加えた範囲内の充電電路

接地体に対する防具の装着範囲は、以下のとおり。

- 絶縁用保護具で、保護されていない身体の部分から 60cm(頭部については 30cm) を加えた範囲内の電柱、変圧器、アームタイ、支線、低圧線等の接地体
- 高所作業車を使用して電柱径間途中で高圧活線作業を行う場合は、上方(頭上) 30cm、側方 60cm、下方(バケットの上端部から)60cm を加えた範囲内の接地体。なお、上記の範囲外にあっても作業中の動揺で高圧電線と連動して跳ね上がる恐れのある高圧中間分岐金物・メッセンジャーワイヤーについては、防具を装着する。

#### (d) 高圧活線近接作業

高圧充電電路に近接する場合において、高圧活線作業時の防護範囲内に近接する場合、絶縁用保護具および防具の装着は高圧活線作業に準じて行う。

#### (e) 低圧活線作業

低圧活線作業を行う場合で、感電の恐れがある場合は、安全帽、低圧用絶縁手袋、絶縁衣および絶縁長靴を着用する。また、作業個所が濡れている場合や、導電性の高いものの上で作業を行う場合などは、低圧充電電路および接地体に防具を装着する。

### (4) 停電作業

#### (a) 高圧区分開閉器の操作

作業停電のための高圧区分開閉器の操作は、「高圧開閉器操作指令書」に基づき、1 指令、1 操作により指差呼称確認して行う。

#### (b) 高圧区分開閉器の施錠

作業のため開路した高圧区分開閉器ならびに当該区間に関係のある常時開路の高圧区分開閉器は、施錠を確実にを行い、「停電作業開路中」の表示札を取付ける。

#### (c) 発電設備連系お客さま、低圧側からの逆充電防止

発電設備連系お客さまの高圧お客さま区分開閉器の開放および作業区間内の柱上変圧器の一次開閉器を開放する。

なお、柱上変圧器の一次開閉器より負荷側で作業を行う場合は、柱上変圧器二次側において短絡接地を行う。

#### (d) 停電の確認

開路した高圧配電線または柱上変圧器二次側は、作業着手前に各相ごとに停電していることを検電器で確認する。

#### (e) 短絡接地器具の取付

開路した高圧配電線には、作業中に誤送電、他の電路との混触または他の電路からの誘導等による感電を防止するため、作業現場に近い電源側に短絡接地器具を取付ける。

(f) 作業終了時の確認

停電作業が終了したときは、作業指揮者は電気回路の誤接続または接続忘れ、人員点呼により通電しても作業員が安全であることおよび短絡接地器具の取外しが完了していることを自ら確認した後、作業終了報告を行う。





### 3. Basic Manual for ArcMap



## Contents

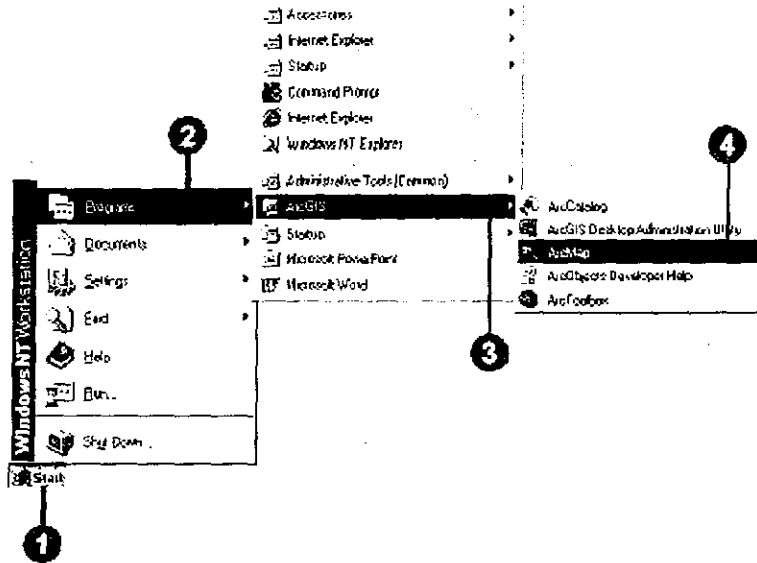
1. Starting ArcMap .....	1
2. Opening a new empty map .....	1
3. Adding data in ArcMap.....	2
4. Showing the table of contents.....	2
5. Turning a layer on or off .....	3
6. Zooming in or out .....	3
7. Panning.....	4
8. Zooming to the full extent of the data .....	4
9. Moving back or forward one display .....	4
10. Zooming to a specific scale .....	5
11. Identifying features by pointing at them.....	5
12. Viewing a layer's attribute table .....	6
13. Finding features with particular attributes .....	6
14. Setting the units for reporting lengths and displaying coordinates.....	7
15. Measuring distance.....	8
16. Moving a layer to change its drawing order .....	8
17. Changing the name of a layer .....	9
18. Removing a layer .....	9
19. Creating a new shapefile .....	10
20. Creating features on layers .....	11
21. Opening a layer's attribute table .....	13
22. Editing text in records .....	13
23. Adding a field to a table .....	14
24. Deleting a field from a table .....	14
25. Deleting records.....	14
26. Selecting records by attributes .....	15
27. Changing the display symbol.....	15
28. Labeling all features in a layer dynamically .....	16
29. Displaying features by category.....	17
30. Creating and accessing hyperlink.....	18
31. Creating a graph and adding it to a layout.....	19
32. Saving a map as a new map .....	20
33. Adding a table with x,y coordinates.....	21
34. Creating DBF file for x,y coordinates .....	22



### 1. Starting ArcMap

ArcMap lets you explore your geographic data and create maps for display.

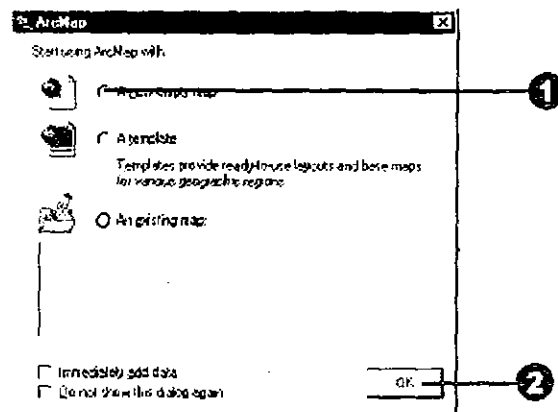
1. Click the Start button on the Windows taskbar.
2. Point to Programs.
3. Point to ArcGIS.
4. Click ArcMap.



### 2. Opening a new empty map

The first time you start ArcMap, the Startup dialog box appears. The Startup dialog box offers you several options for starting your ArcMap session. For this exercise, you want to open a new empty map document.

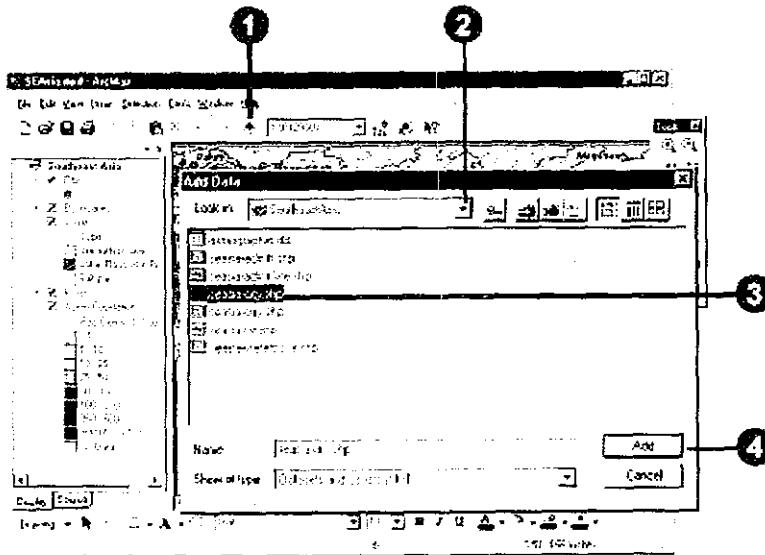
1. Click A new empty map
2. Click OK



### 3. Adding data in ArcMap

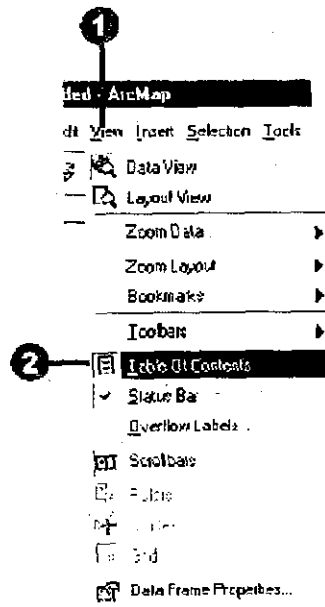
1. Click the Add Data button on the Standard toolbar.
2. Click the Look in dropdown arrow and navigate to the folder that contains the data source.
3. Click the data source.
4. Click Add.

ArcMap creates a new layer on the map that references the data source.



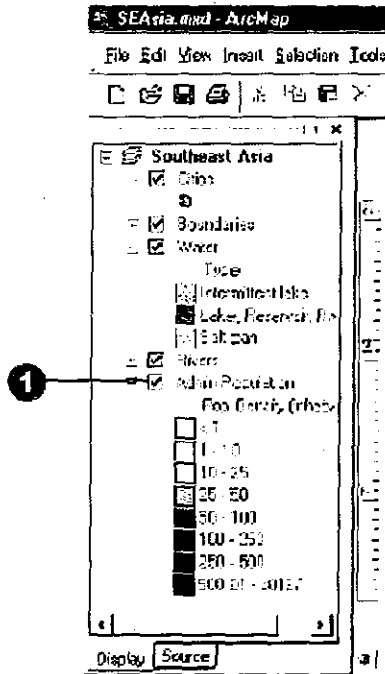
### 4. Showing the table of contents

1. Click the View menu on the Standard toolbar.
2. Click Table Of Contents.



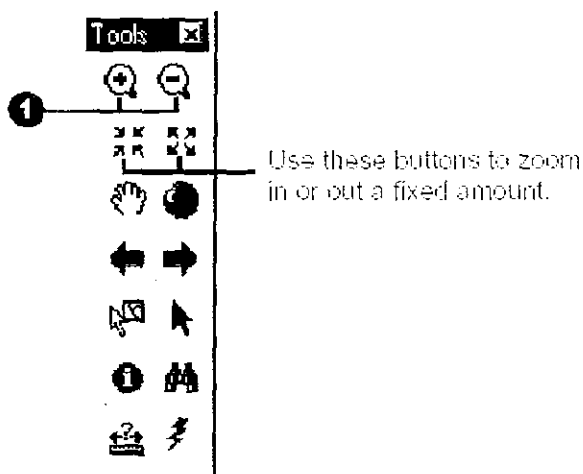
### 5. Turning a layer on or off

1. In the table of contents, check the box next to the layer's name. The layer should appear on your map. If you can't see the layer, it may be hidden by another layer or display only at a particular scale.



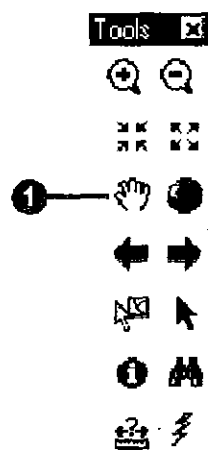
### 6. Zooming in or out

1. Click the Zoom In or Zoom Out button on the Tools toolbar.
2. Move the mouse pointer over the map display and click once to zoom around a point. Alternatively, click and drag a rectangle defining the area you want to zoom in or out on.



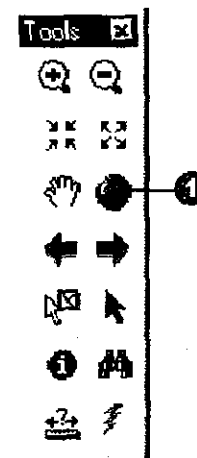
### 7. Panning

1. Click the Pan button on the Tools toolbar.
2. Move the mouse pointer over the map display and click and drag the pointer.



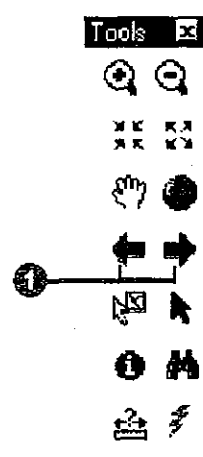
### 8. Zooming to the full extent of the data

1. Click the Full Extent button on the Tools toolbar.



### 9. Moving back or forward one display

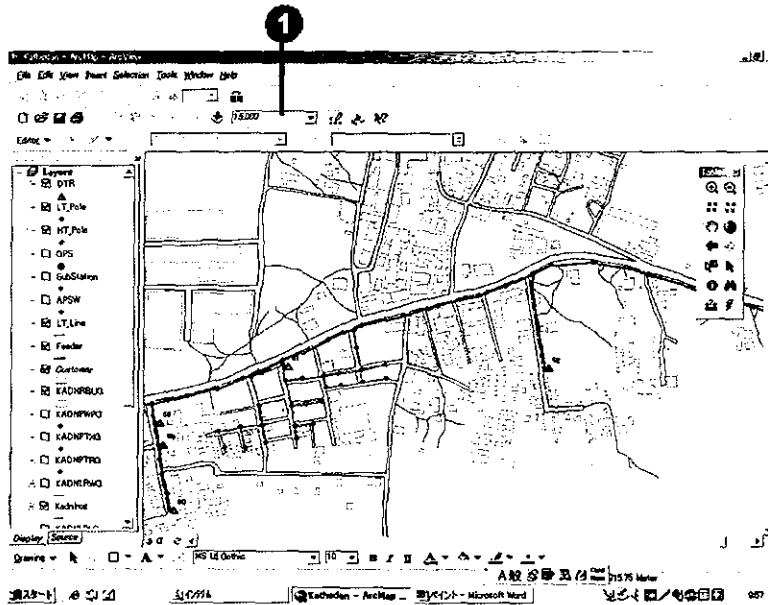
1. Click the Back or Forward Extent buttons on the Tools toolbar.





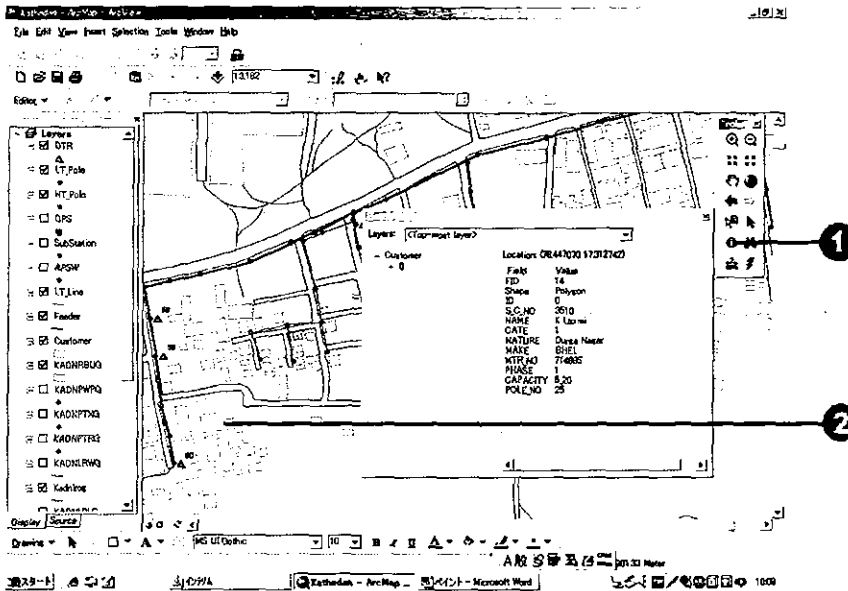
## 10. Zooming to a specific scale

1. Type the desired scale on the Standard toolbar.



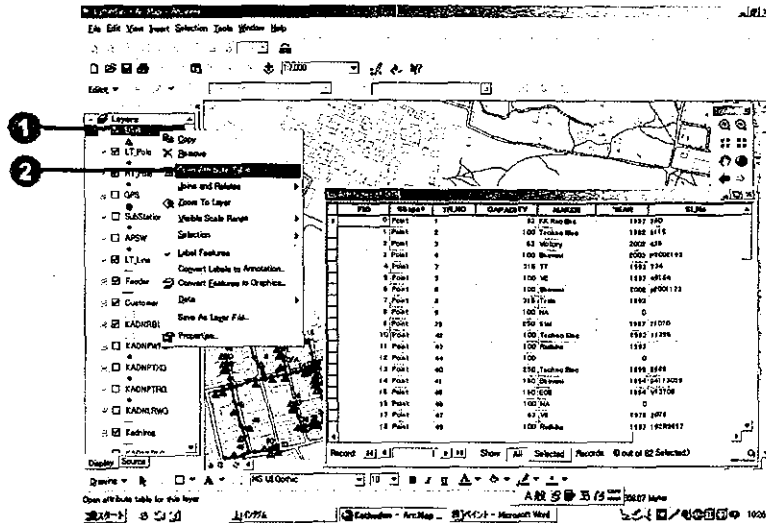
## 11. Identifying features by pointing at them

1. Click the Identify button on the Tools toolbar.
  2. Click the mouse pointer over the map feature you want to identify.
- The features in all visible layers under the pointer will be identified.  
 (Note) This function is useful to know individual information such as transformer, customer, pole, etc.



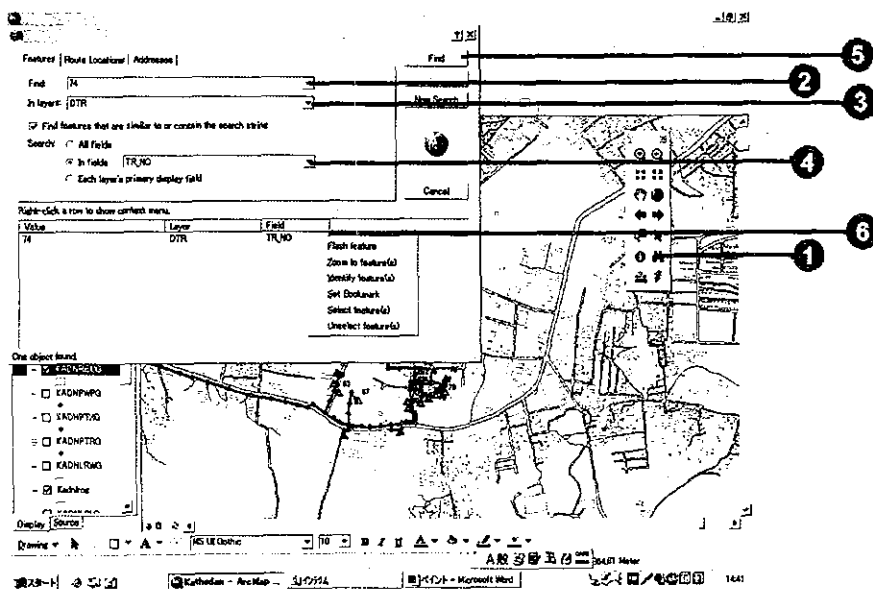
## 12. Viewing a layer's attribute table

1. In the table of contents, right-click the layer for which you want to display the attribute table.
  2. Click Open Attribute Table.
- (Note) This function is useful to know all information of facilities and customers.



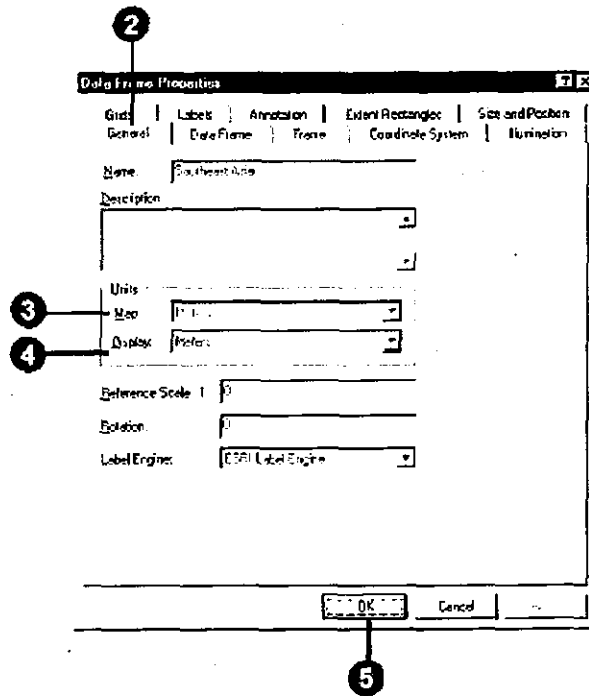
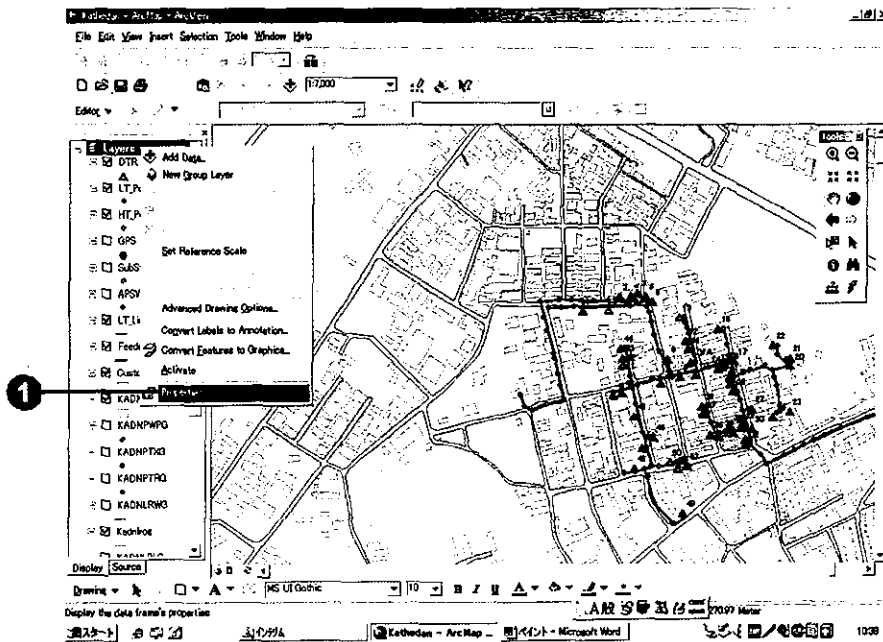
## 13. Finding features with particular attributes

1. Click the Find button on the Tools toolbar.
  2. Type the string you want to find in the Find text box.
  3. Click the In layers dropdown arrow and click the layer you want to search.
  4. Search for the string in all fields, in a specific field, or in the primary display field.
  5. Click Find.
  6. Right-click a row to show context menu.
- (Note) This function is useful to know a location of facilities and customers by inputting name, transformer number, etc.



### 14. Setting the units for reporting lengths and displaying coordinates

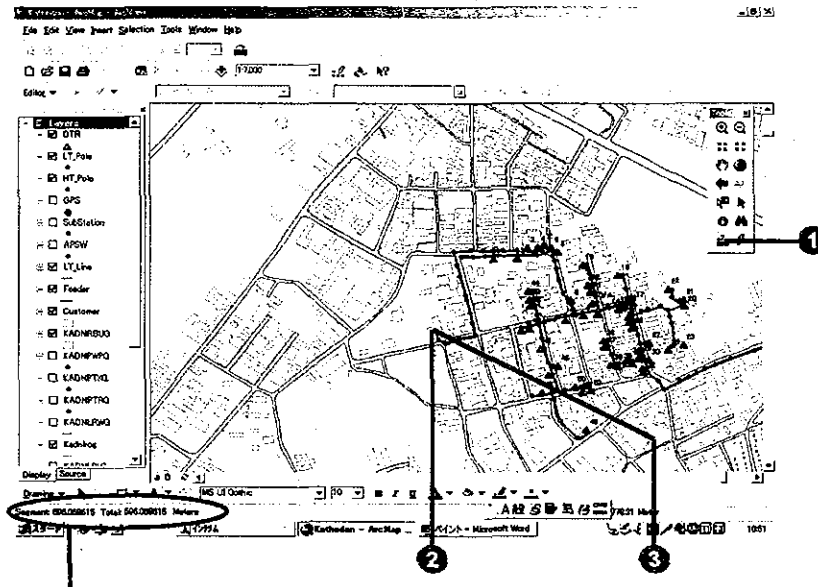
1. Right-click the data frame in the table of contents and click Properties.
2. Click the General tab.
3. Click the Map dropdown arrow and click the appropriate units. The map units option is only available when your data has no coordinate system information associated with it.
4. Click the Display dropdown arrow and click the appropriate units.
5. Click OK.



### 15. Measuring distance

1. Click the Measure button on the Tools toolbar.
2. Use the mouse pointer to draw a line representing the distance you want to measure. The line can have more than one line segment.
3. Double-click to end the line.

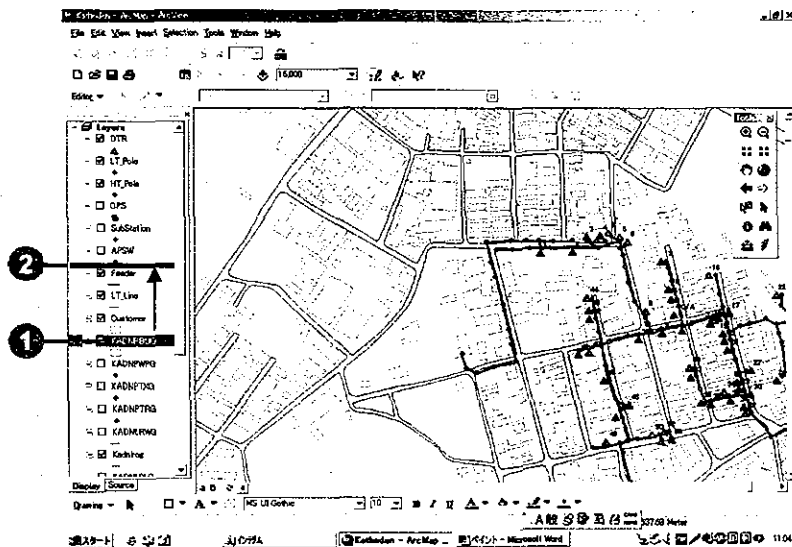
(Note) This function is useful to measure a distance between poles.



The measurement displays here on the status bar.

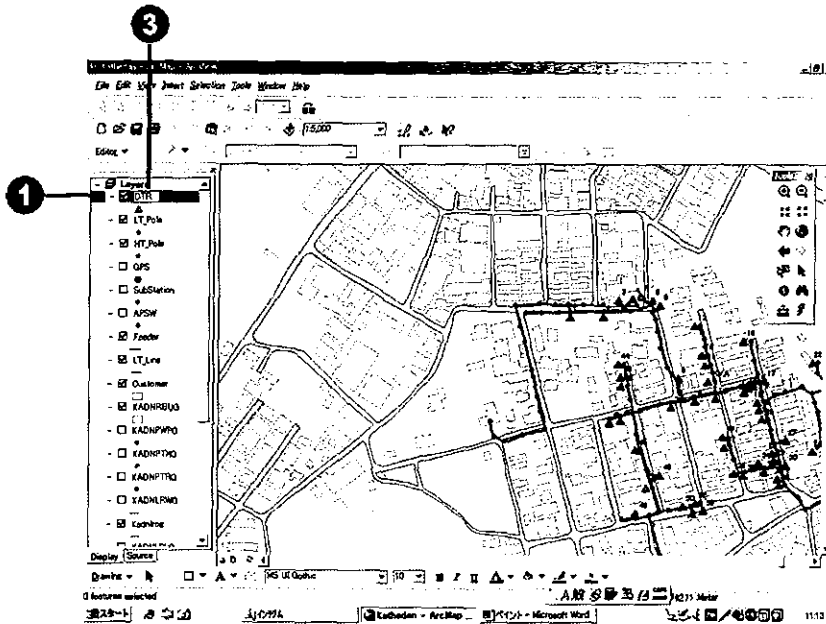
### 16. Moving a layer to change its drawing order

1. In the table of contents, click and drag the layer up or down. A black line indicates where the layer will be placed.
  2. Release the mouse pointer to drop the layer in its new position.
- (Note) Sometimes you cannot find a layer because another layers are covered with the layer. In this case, you should move the layer to the top.



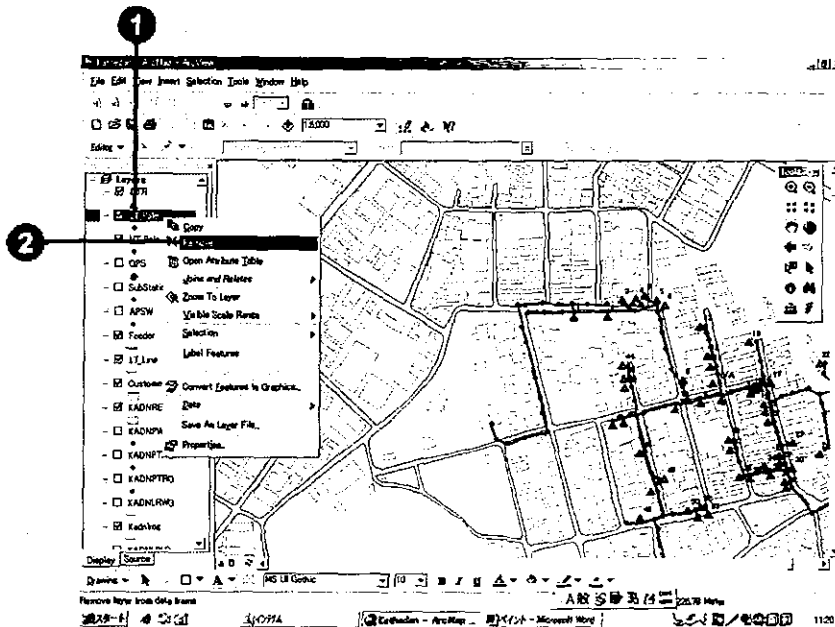
### 17. Changing the name of a layer

1. In the table of contents, click the layer to select it.
  2. Click again over the name.
- This will highlight the name and allow you to change it.
3. Type the new name and press enter.



### 18. Removing a layer

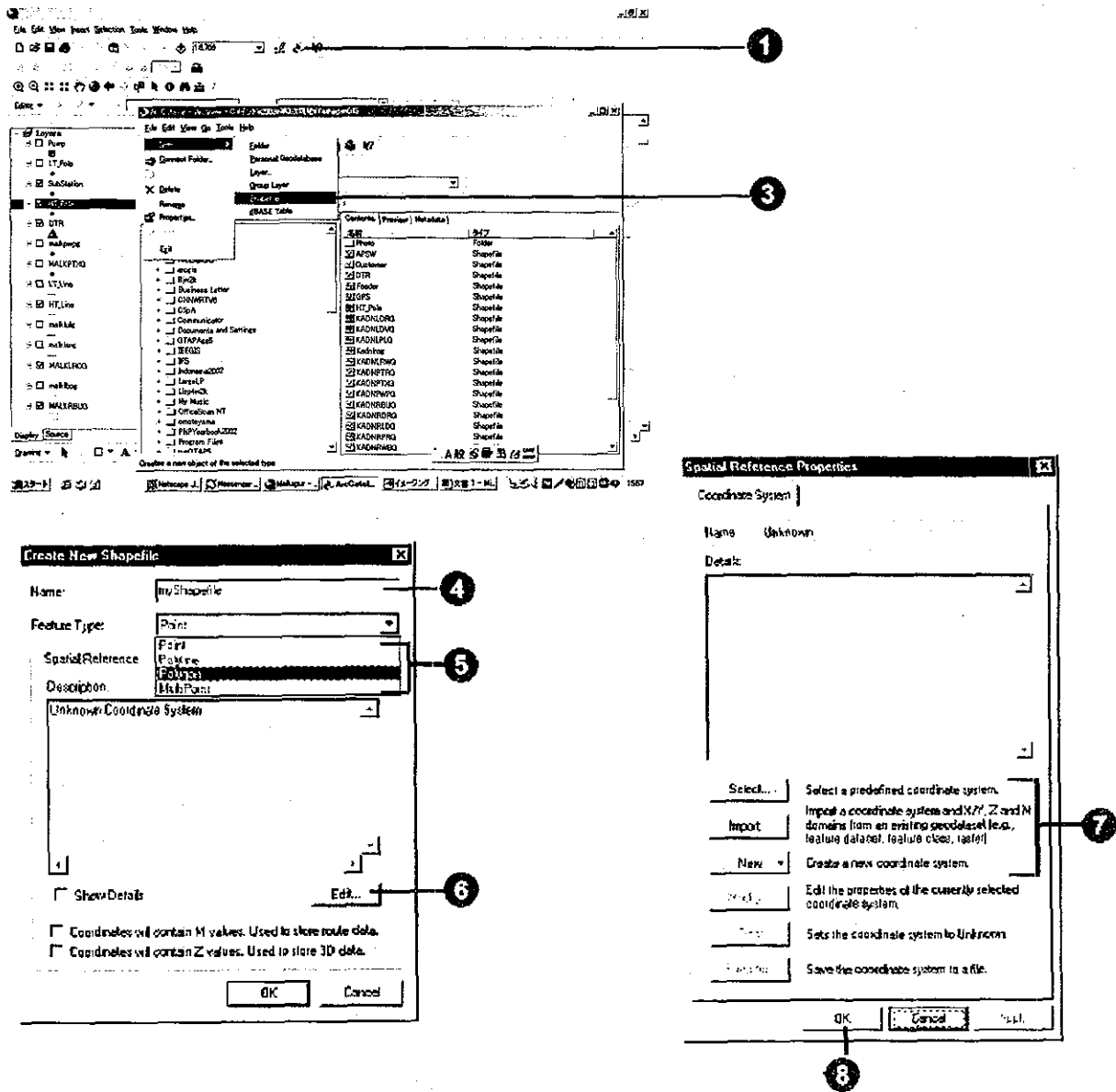
1. In the table of contents, right-click the layer you want to remove.
2. Click Remove.



### 19. Creating a new shapefile

1. Click the ArcCatalog button on the Standard toolbar.
2. Select a folder which a new shapefile is stored in the Catalog tree.
3. Click the File menu, point to New, and click Shapefile.
4. Click in the Name text box and type a name for the new shapefile.
5. Click the Feature Type dropdown arrow and click the type of feature the shapefile will contain.
6. Click Edit to define the shapefile's coordinate system.
7. In the Spatial Reference Properties dialog box, click Select and choose a predefined coordinate system. Or click Import and choose the data source whose coordinate system you want to copy. Or click New and define a new, custom coordinate system.
8. Click OK.

(Note) When you want to add new layer, you have to create new shapfile in advance.



## 20. Creating features on layers

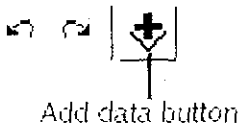
### An overview of the editing process

The following is a general overview of how to use ArcMap and the Editor toolbar to edit your data.

1. Start ArcMap.
2. Create a new map or open an existing one.



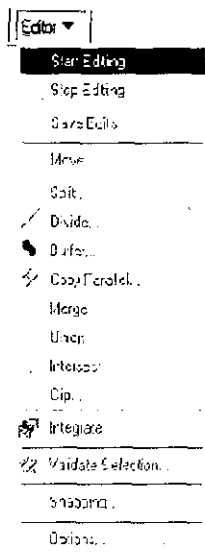
3. Add the data you want to edit to your map.



4. Add the Editor toolbar to ArcMap.

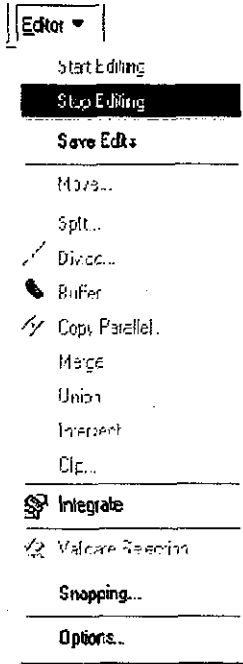


5. Choose Start Editing from the Editor menu.

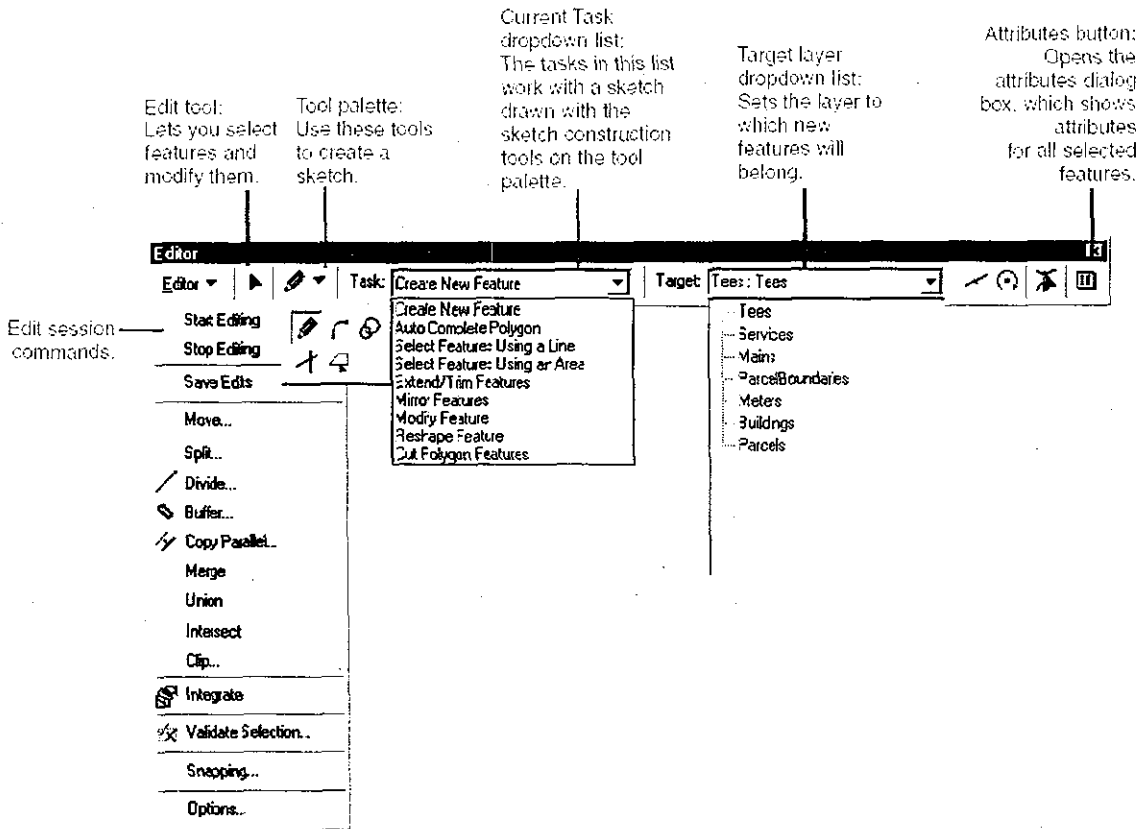


6. Create or modify features and /or their attributes.

7. Choose Stop Editing from the Editor menu and click Yes when prompted to save your edits.



The Editor toolbar



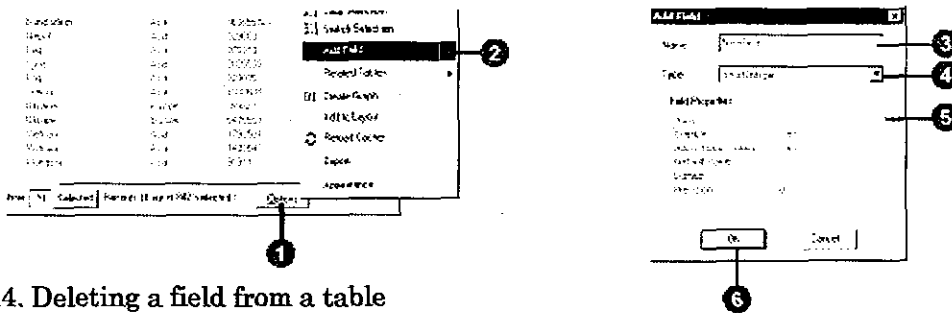




### 23. Adding a field to a table

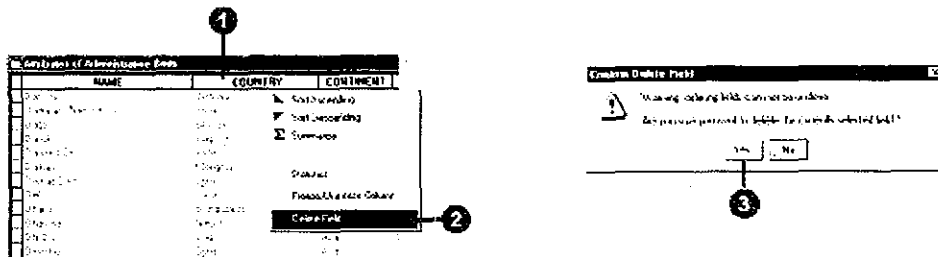
1. Click Options in the table you want to add a field to.
2. Click Add Field.
3. Type the name of the field.
4. Click the Type dropdown arrow and click the field type.
5. Set any other field properties, such as a field alias, as necessary.
6. Click OK.

(Note) This function is useful to add new information to attribute table.



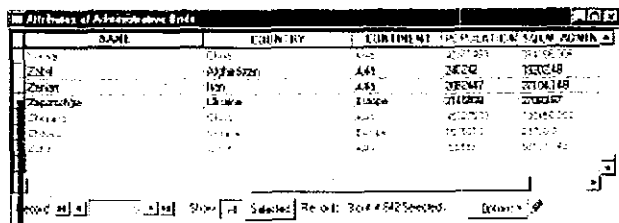
### 24. Deleting a field from a table

1. In the table window, right-click over the field header of the field you want to delete.
  2. Click Delete Field.
  3. Click Yes to confirm the deletion.
- Deleting a field cannot be undone.



### 25. Deleting records

1. If you haven't started an edit session, click the Editor menu on the Editor toolbar and click Start Editing.
  2. Open the table you want to edit.
  3. Select the records you want to delete. Press and hold the Ctrl key while clicking to select more than one record.
  4. Press the Delete key on the keyboard.
- Any geographic features associated with the records are also deleted.



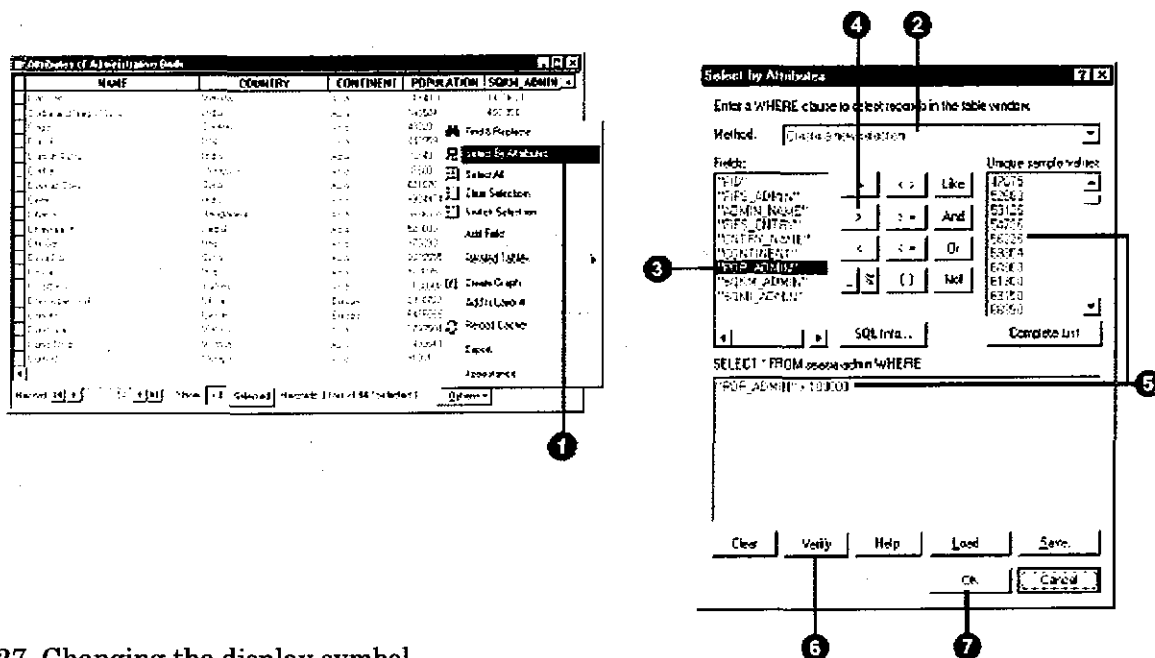
To select a record, click in the first column adjacent to the record you want to select.

## 26. Selecting records by attributes

1. Click Options in the table you want to query and click Select By Attributes.
  2. Click the Method dropdown arrow and click the selection procedure you want to use.
  3. Double-click the field from which you want to select.
  4. Click the logical operator you wish to use.
  5. Scroll to and double-click the value in the Unique sample values list you wish to select.
- Alternatively, you can type a value directly into the text box.
6. Click Verify to verify your selection.
  7. Click OK.

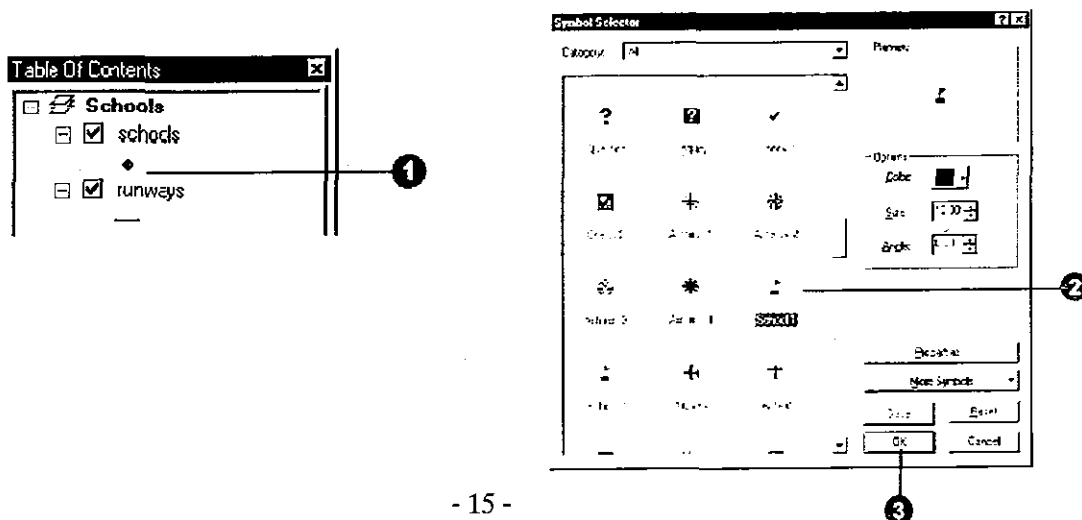
Your selection is highlighted in the table.

(Note) This function is useful to find information you want to know.



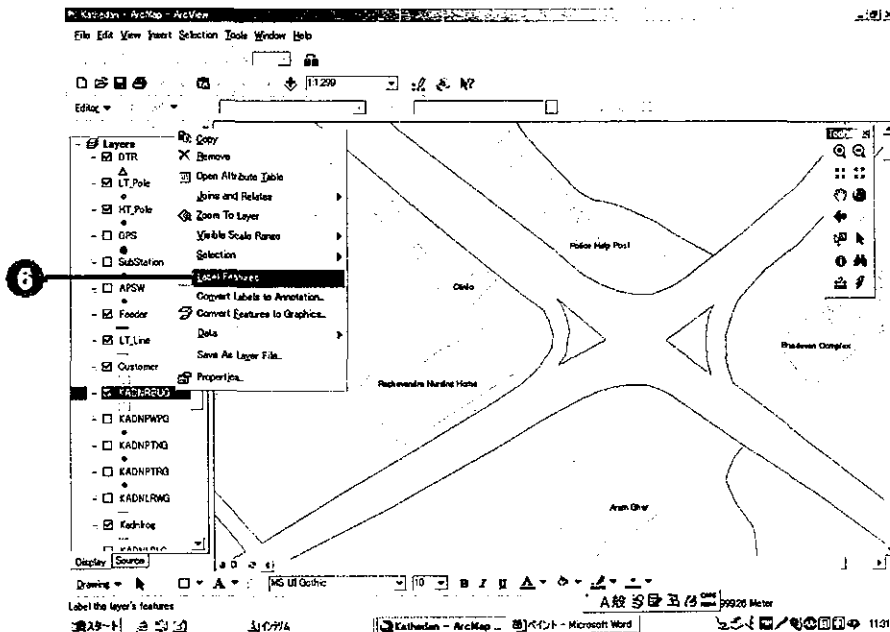
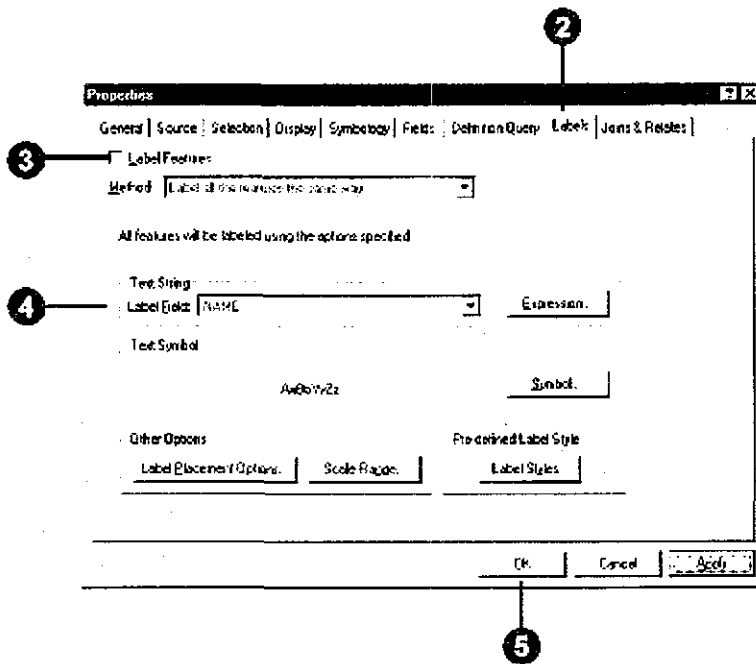
## 27. Changing the display symbol

1. Click the dot symbol in the table of contents to display the Symbol Selector window.
2. Scroll down until you find the School 1 symbol. Click it.
3. Click OK. The schools are drawn with the new symbol.



## 28. Labeling all features in a layer dynamically

1. In the table of contents, right-click the layer you want to label and click Properties.
2. Click the Labels tab.
3. Check Label Features.
4. Click the Label Field dropdown arrow and click the field you want to use as a label.
5. Click OK.
6. In the table of contents, right-click the layer and check Label Features to turn dynamic labels on. Uncheck Label Features to turn them off.

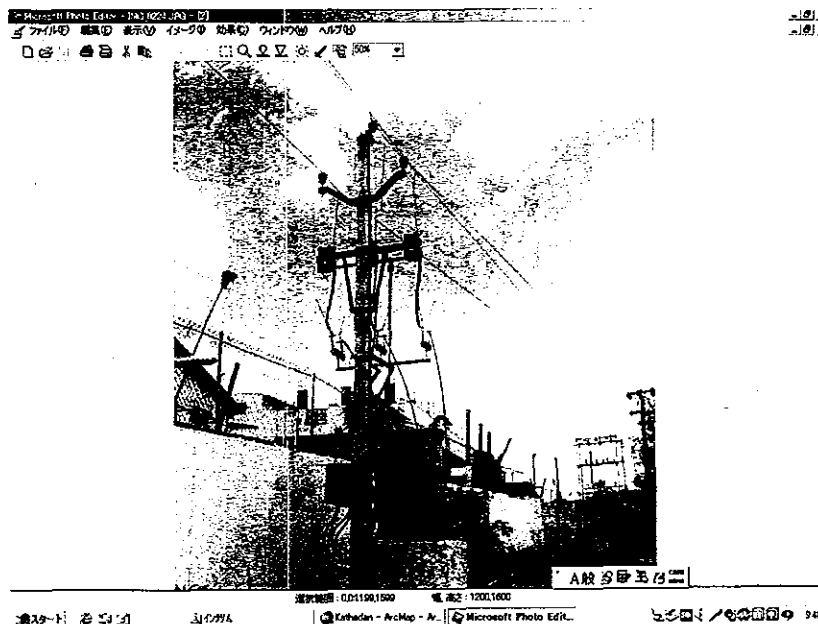
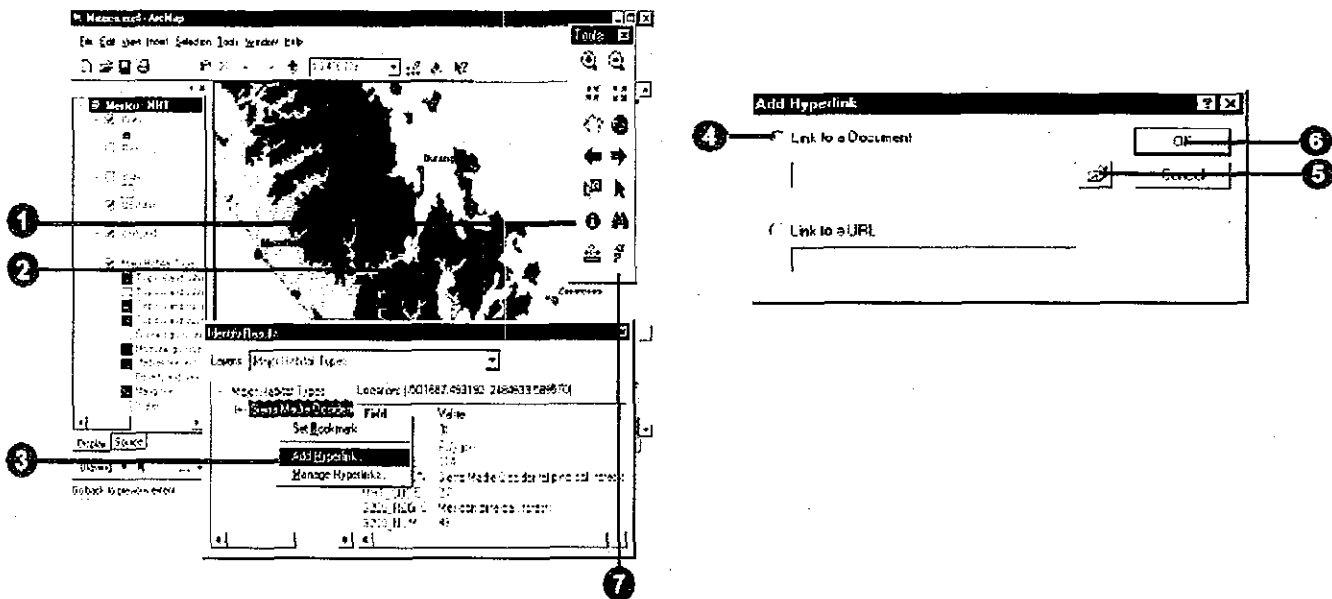




### 30. Creating and accessing hyperlink

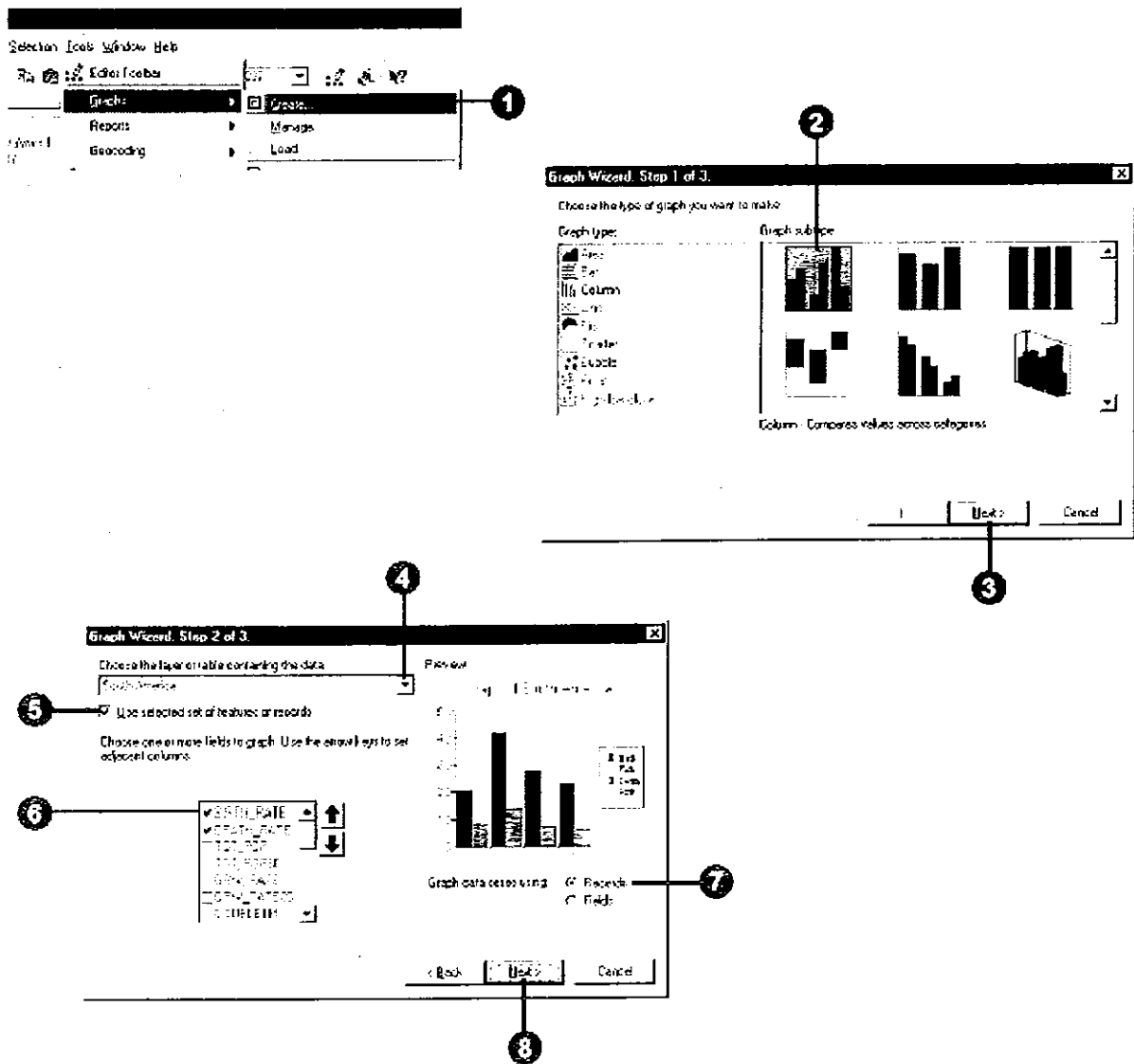
1. Click the Identify Features button on the Tools toolbar.
2. Click a feature you want to create hyperlink.
3. In the Identify Results window, right-click the feature you want to set a hyperlink for and click Add Hyperlink.
4. To link to a document, click Link to a Document.
5. Choose a document on your holder.
6. Click OK.
7. Click the Hyperlink tool on the Tools toolbar and click a feature.

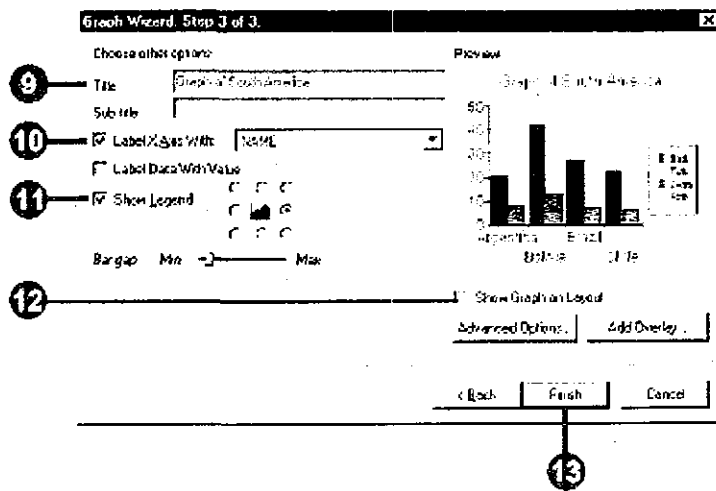
(Note) This function is useful to know a situation of facilities' installation.



### 31. Creating a graph and adding it to a layout

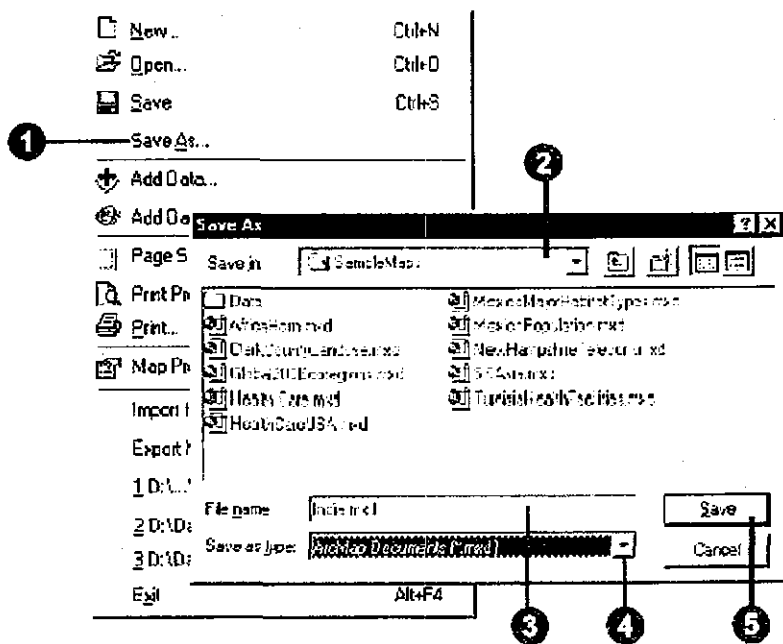
1. Click the Tools menu, point to Graphs, and click Create.
  2. Click the Graph type and subtype you want.
  3. Click Next.
  4. Click the dropdown arrow and click the layer or table you want to graph.
  5. Check to graph only the selected features or records.
  6. Check the fields you want to graph.
  7. Click an option to graph data series using Records or Fields.
  8. Click Next. u
  9. Type a title for the graph.
  10. Check Label X Axis With, then click the dropdown arrow and click a field.
  11. Check Show Legend.
  12. Check Show Graph on Layout.
- You can add the graph to the layout later if necessary.
13. Click Finish.





### 32. Saving a map as a new map

1. Click the File menu and click Save As.
2. Navigate to the location to save the map document.
3. Type a file name.
4. Click the Save as type dropdown arrow and click ArcMap Documents.
5. Click Save.

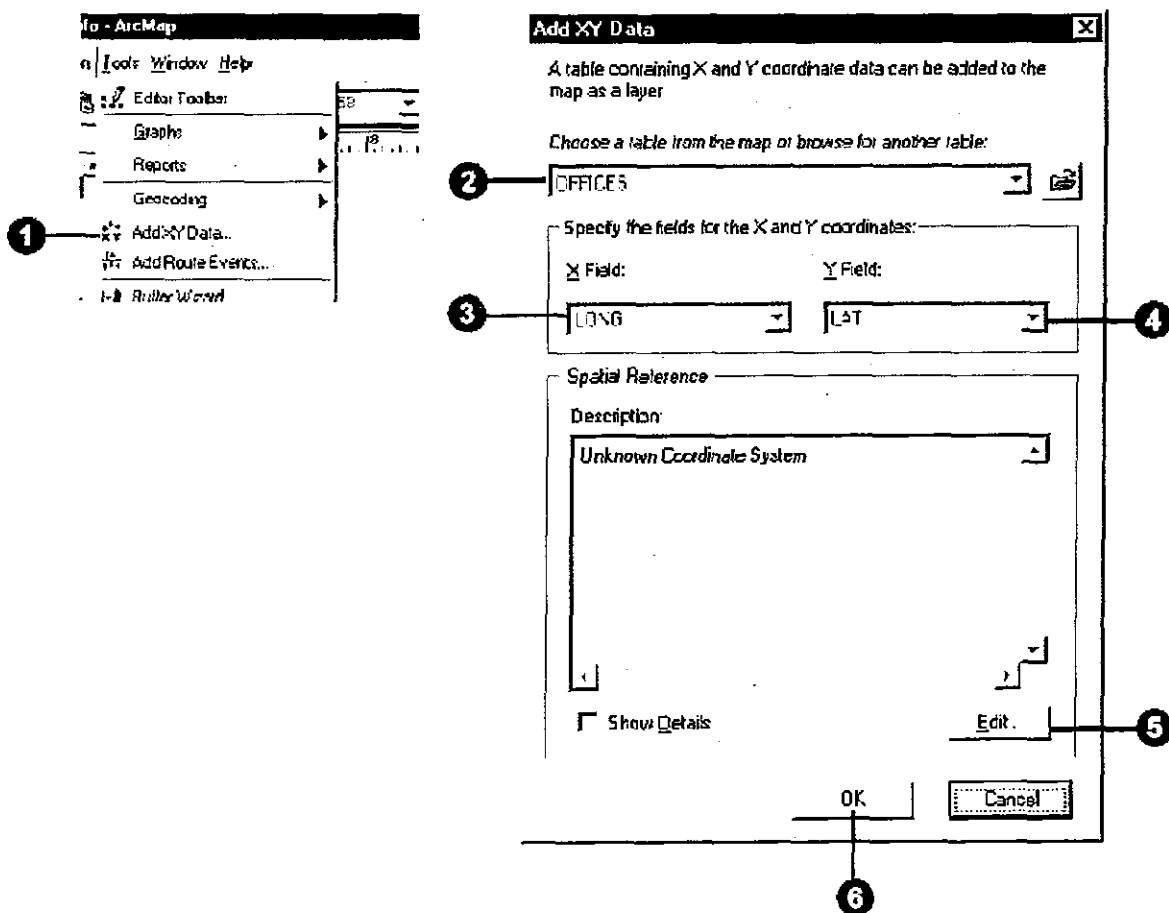




### 33. Adding a table with x,y coordinates

1. Click the Tools menu on the Standard toolbar and click Add XY Data.
2. Click the table dropdown arrow and click a table that contains x,y coordinate data.  
If the table is not on the map, click the browse button to access it from disk. File format of table should be dbf file format. Please refer to next item 34 if you do not know how to make dbf file.
3. Click the X Field dropdown arrow and click the field containing x coordinate values.
4. Click the Y Field dropdown arrow and click the field containing y coordinate values.
5. Click Edit to define the coordinate system and units represented in the x and y fields.
6. Click OK.

(Note) This function is useful to display locations for facilities when you do not have enough landmarks on your map.



### 34. Creating DBF file for x,y coordinates

You can create DBF file using Microfoft Excel.

1. Input longitude and latitude data that were obtained by GPS to Excel file.

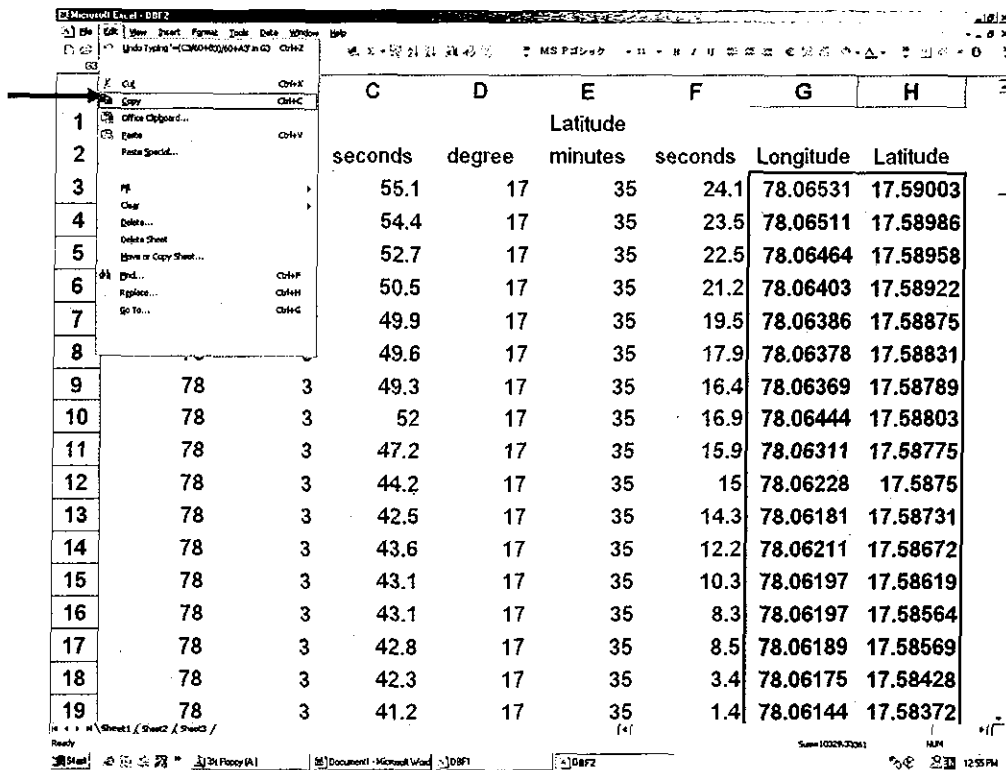
	Longitude			Latitude		
	degree	minutes	seconds	degree	minutes	seconds
3	78	3	55.1	17	35	24.1
4	78	3	54.4	17	35	23.5
5	78	3	52.7	17	35	22.5
6	78	3	50.5	17	35	21.2
7	78	3	49.9	17	35	19.5
8	78	3	49.6	17	35	17.9
9	78	3	49.3	17	35	16.4
10	78	3	52	17	35	16.9
11	78	3	47.2	17	35	15.9
12	78	3	44.2	17	35	15
13	78	3	42.5	17	35	14.3
14	78	3	43.6	17	35	12.2
15	78	3	43.1	17	35	10.3

2. You have to convert all data from 60 system to decimal system.

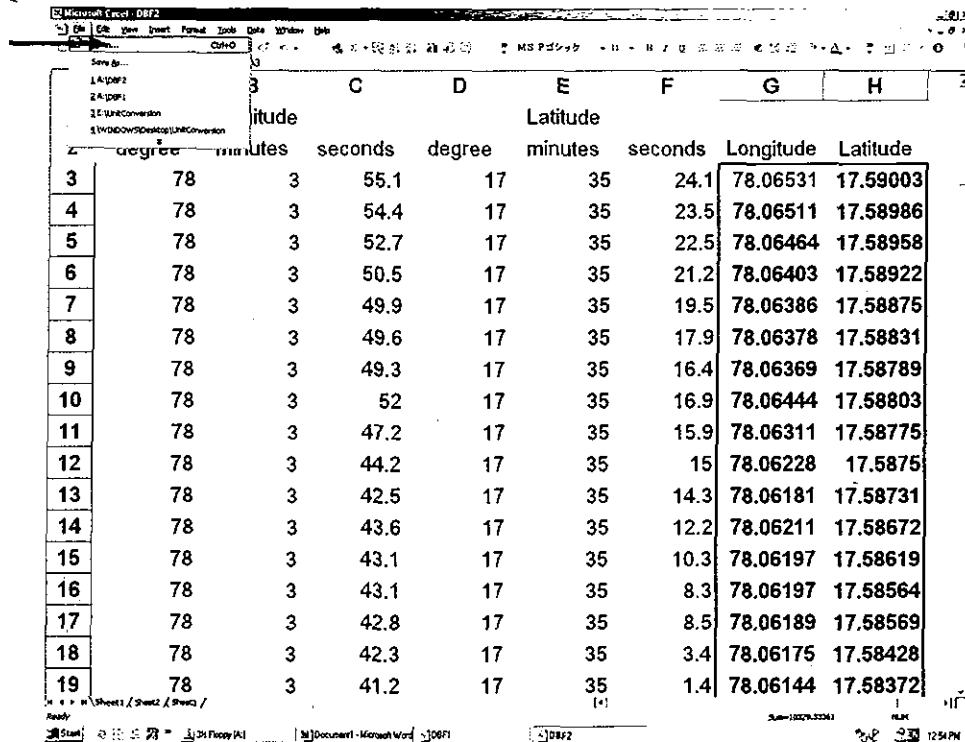
Equation = (seconds/60 + minutes)/60 + degree

	Longitude			Latitude		
	degree	minutes	seconds	degree	minutes	seconds
3	78	3	55.1	17	35	24.1
4	78	3	54.4	17	35	23.5
5	78	3	52.7	17	35	22.5
6	78	3	50.5	17	35	21.2
7	78	3	49.9	17	35	19.5
8	78	3	49.6	17	35	17.9
9	78	3	49.3	17	35	16.4
10	78	3	52	17	35	16.9
11	78	3	47.2	17	35	15.9
12	78	3	44.2	17	35	15
13	78	3	42.5	17	35	14.3
14	78	3	43.6	17	35	12.2
15	78	3	43.1	17	35	10.3
16	78	3	43.1	17	35	8.3
17	78	3	42.8	17	35	8.5
18	78	3	42.3	17	35	3.4
19	78	3	41.2	17	35	1.4
20	78	3	41.4	17	34	59.8
21	78	3	41.2	17	34	58.7

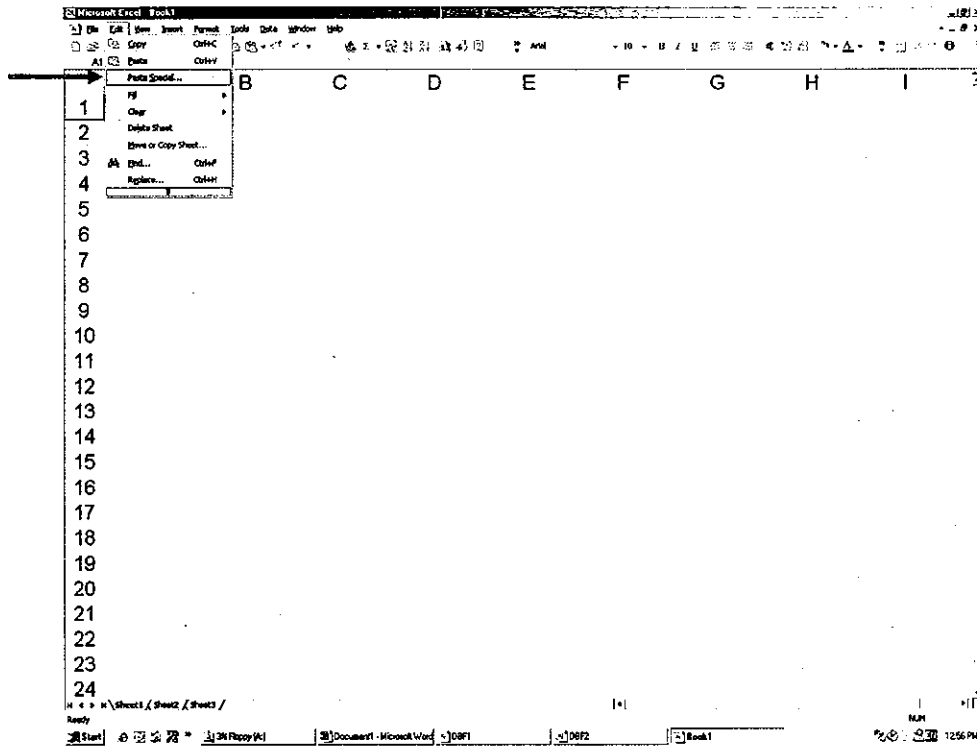
3. Select data that you converted.
4. Click copy.



5. Open new file.

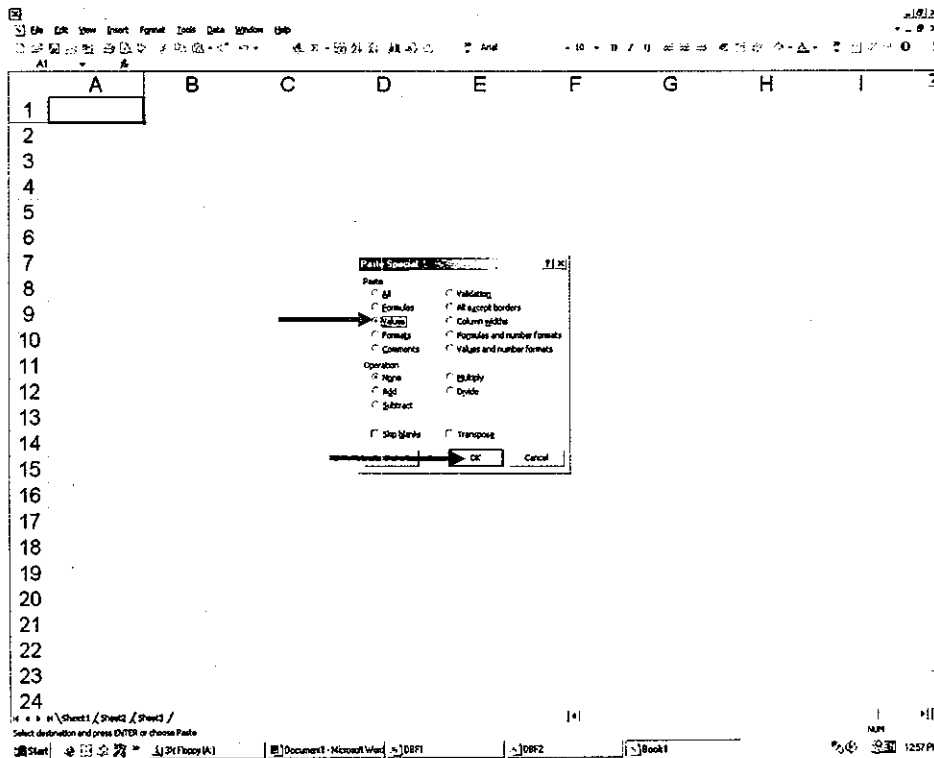


6. Click Paste Special.

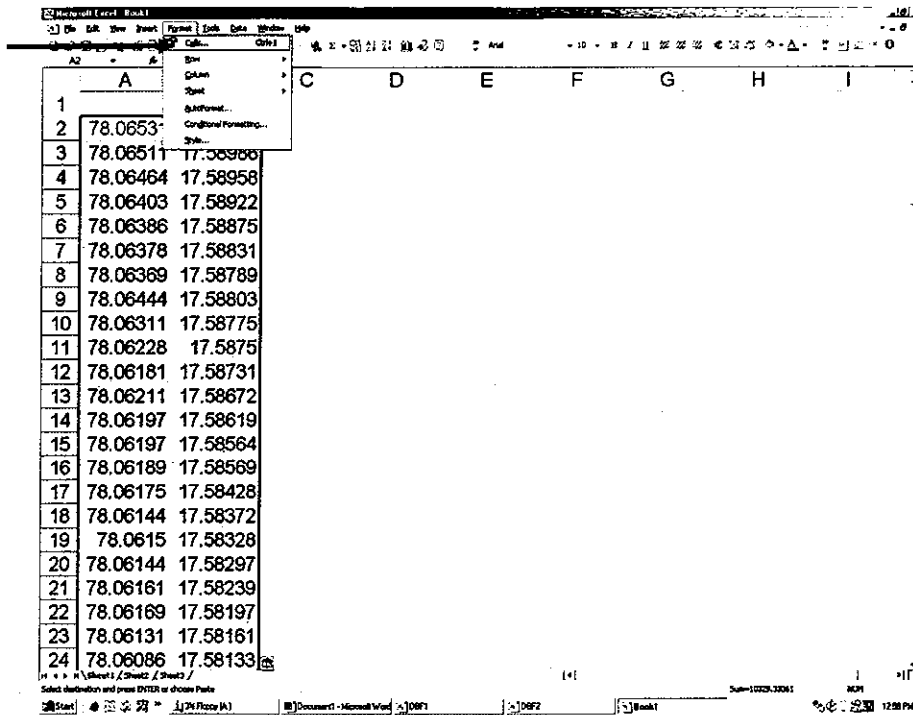


7. Click value.

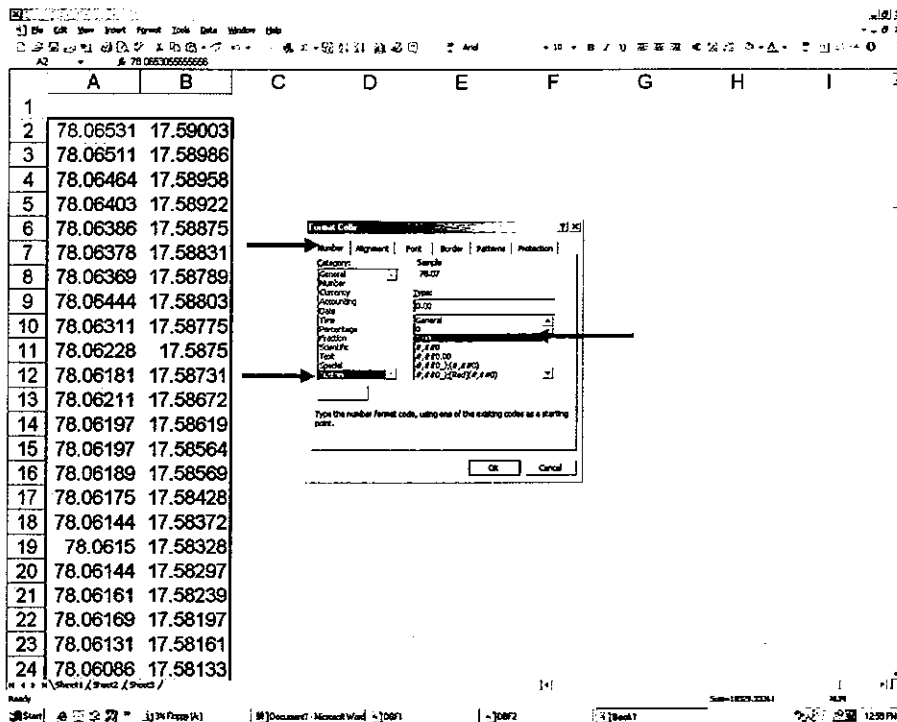
8. Click OK.



9. Select data.
10. Click Cell.



11. Click Number
12. Click Custom
13. Click 0.00



14. Add 0 down to 5th or 6th places of decimals.

15. Click OK.

	A	B	C	D	E	F	G	H	I
1									
2	78.06531	17.59003							
3	78.06511	17.58986							
4	78.06464	17.58958							
5	78.06403	17.58922							
6	78.06386	17.58875							
7	78.06378	17.58831							
8	78.06369	17.58789							
9	78.06444	17.58803							
10	78.06311	17.58775							
11	78.06228	17.58750							
12	78.06181	17.58731							
13	78.06211	17.58672							
14	78.06197	17.58619							
15	78.06197	17.58564							
16	78.06189	17.58569							
17	78.06175	17.58428							
18	78.06144	17.58372							
19	78.0615	17.58328							
20	78.06144	17.58297							
21	78.06161	17.58239							
22	78.06169	17.58197							
23	78.06131	17.58161							
24	78.06086	17.58133							

16. Input LONG and LAT in cell A1 and B1.

	A	B	C	D	E	F
1	LONG	LAT				
2	78.06531	17.59003				
3	78.06511	17.58986				
4	78.06464	17.58958				
5	78.06403	17.58922				
6	78.06386	17.58875				
7	78.06378	17.58831				
8	78.06369	17.58789				
9	78.06444	17.58803				
10	78.06311	17.58775				
11	78.06228	17.58750				
12	78.06181	17.58731				
13	78.06211	17.58672				
14	78.06197	17.58619				
15	78.06197	17.58564				
16	78.06189	17.58569				
17	78.06175	17.58428				

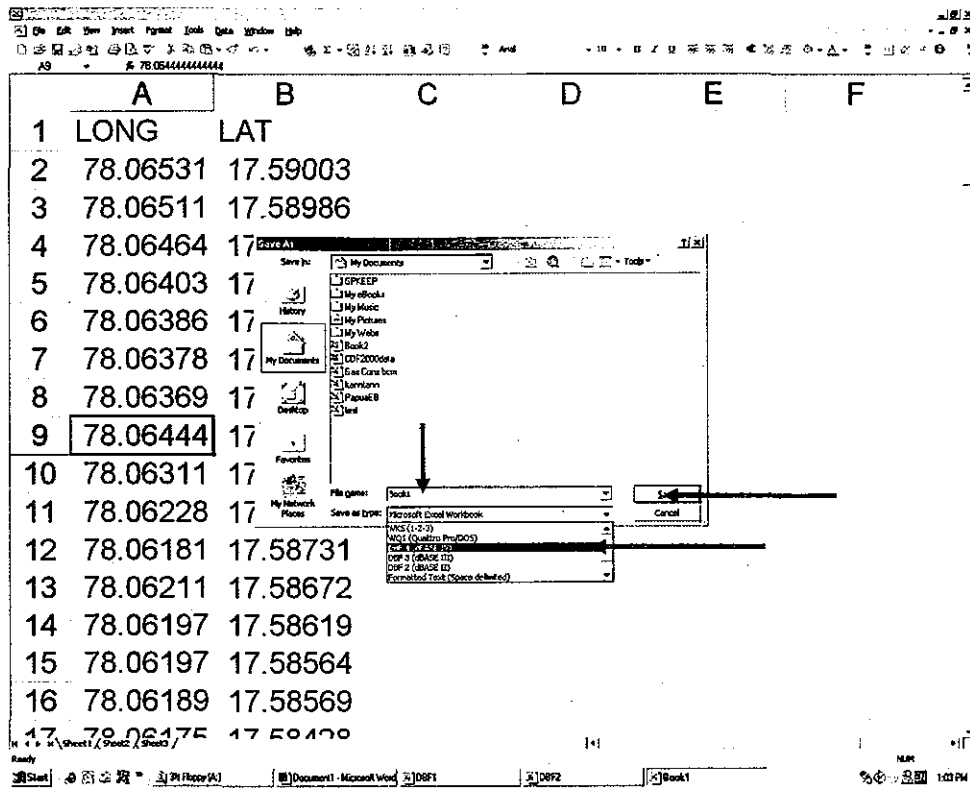
17. Click a cursor on any data.

	A	B	C	D	E	F
1	LONG	LAT				
2	78.06531	17.59003				
3	78.06511	17.58986				
4	78.06464	17.58958				
5	78.06403	17.58922				
6	78.06386	17.58875				
7	78.06378	17.58831				
8	78.06369	17.58789				
9	78.06444	17.58803				
10	78.06311	17.58775				
11	78.06228	17.58750				
12	78.06181	17.58731				
13	78.06211	17.58672				
14	78.06197	17.58619				
15	78.06197	17.58564				
16	78.06189	17.58569				
17	78.06175	17.58420				

18. Click Save as.

	A	B	C	D	E	F
2	78.06531	17.59003				
3	78.06511	17.58986				
4	78.06464	17.58958				
5	78.06403	17.58922				
6	78.06386	17.58875				
7	78.06378	17.58831				
8	78.06369	17.58789				
9	78.06444	17.58803				
10	78.06311	17.58775				
11	78.06228	17.58750				
12	78.06181	17.58731				
13	78.06211	17.58672				
14	78.06197	17.58619				
15	78.06197	17.58564				
16	78.06189	17.58569				
17	78.06175	17.58420				

- 19. Input name in File Name.
- 20. Select DBF 4 (dBASE IV).
- 21 Save



Microfoft Excel asks you some messages (warning). You can click OK.



## 付 録

1. 面談者リスト
2. 収集資料リスト
3. 議事録 / メモランダム



# インド国アンドラプラデッシュ州配電改善計画調査

## 付録 1 面談者リスト



## インド国アンドラプラディッシュ州配電改善計画調査 面談者

## 第 1 次調査

## Embassy of Japan

H. E. K. Kodama

Minister

Mr. H. Kobayashi

Counsellor

## JICA India Office

Mr. T. Take

Deputy Resident Representative

Mr. T. Matsumoto

Assistant Resident Representative

## APTRANSCO

Mr. T. R. C. Bose

Director, Projects

Mr. D. Ramakrishna Rao

CE, DFID &amp; APL

Mr. Ramakosteswara Rao

DE, DFID

Mr. A.D.V. Sai Baba Rao

Superintending Engineer

## APCPDCL

Mr. S. Suryaprakasa Rao

Director, Commercial

Mr. G. Purandar Rao

DE, Projects (SE, O &amp; M)

Mr. L. Radha Krishna

DE, Operation

Mr. C. Srinivasa Rao

Director (Finance)

Mr. G. Sudarshan

General Manager

Mr. J. Sreenivasa Reddy

SE, RR(S)

Mr. Mohad Mazhar Ali

AAE, Tech.RR(S)

Mr. V. Gandhi Das

SE, RR(N)

Mr. P. Sadanandam

SE, Sangareddy, Operation

Mr. Manohar

AE, Commercial, Sangareddy

Mr. Peachushetty

LT Meter, Sangareddy

Mr. Kondal Reddy

DE/SCADA

Mr. V. Sudahakar

ADE/Project

Mr. Srinivasa Chary

ADE/SCADA

Mr. C. P. Bapulu

S.E./OP/CENTRAL

Mr. Venkalayah

D.E/Meters/Sangareddy

Mr. K. Raghuma Reddy

D.E/Operation/Saroornagar

Mr. S. Chittaranjan

A.D.E/Operation/Saroornagar

Mr. N. L. Prabhaker

A.D.E/Gaganpahad



## インド国アンドラプラディッシュ州配電改善計画調査 面談者

## 第2次調査

## JICA India Office

Mr. T. Sakai

Resident Representative

Mr. T. Matsumoto

Assistant Resident Representative

## APTRANSCO

Mr. J. V. Pandurangam

Director/Project

Mr. D. Ramakrishna Rao

CE/DFID&amp;APL

Mr. Ramakoteswara Rao

DE/DFID

Ms. D. Jayshree

A.E./OPN/APTRANSCO

## APCPDCL

Mr. Suyaprakasa Rao

Director/Commercial &amp; Project

Mr. G. Purandar Rao

DE/Project

Mr. Ramamohan Meda

DE/SCADA

Mr. Srinivasa Chary

ADE/SCADA

Mr. Ch. Chakrapari

ADE/SCADA Project

Mr. D. Sudhama

Sub-Engineer/Hyath nagar SS

Mr. NI Prabhakar

ADE/OP/Kattedan SS

Mr. K Rajendar

ADE/OP/Kattedan SS

Ms. Jyothi Rani

AE/Telecom

Mr. Chiranjeevi Rao

AE/Telecom

Mr. K. Rajeswar

DE, Technical, RR(S)

Mr. Hemachandler

ADE, Commercial, RR(S)

Mr. D. L. Prabhakar

ADE, Gaganpahad, RR(S)

Mr. Y. Markandaiah

DE, Operation, Rajendranagar, RR(S)

Mr. K. Raghuma Reddy

DE, Operation. Saroornagar, RR(S)

Mr. G. Amuruthaiah

DE, Technical, RR(N)

Mr. M. Sudhakar Reddy

DE, Technical, RR(N)

Mr. S. Ravi Kumar

ADE, Cpmmercial, RR(N)

Mr. N. Sudhakar

AEE, Technical, RR(N)

Mr. P. Jagathpal Reddy

SE, Operation, Sangareddy

Mr. K. Venkat Reddy

DE, Technical, Sangareddy

Mr. Md. Masood

AEE, Malkapur, Sangareddy

Mr. K. Bagaiah

AE, Commercial, Sangareddy

付録 1 面談者リスト

---

Mr. Krishna Murthy	ADE, Operation, Sadasivapet, Sangareddy
Mr. K. Raju	AE, Technical, Sangareddy
Mr. L. Radha Krishna	DE, Operation
Mr. J. Sreenivasa Reddy	SE, RR(S)
Mr. Mohad Mazhar Ali	AAE, Tech.RR(S)
Mr. Manohar	AE, Commercial, Sangareddy
Mr. K. Vekata Narayana	Chief General Manager/APCPDCL
Mr. Venkalayah	D.E/Meters/Sangareddy
Mr. Syod Masood	Addi. Assit. Engineer/OP/Condapur
Mr. P.V.L. Narayana Rao	ERO, Saroornagar
Mr. K. Bagaind	AE/Commercial, Sanga Reddy
Mr. L.N. Plabhakee	ADE/Operation, Gaganpahad (Kattedan)
Other	
Mr. S.R.Vijayan	Mnager-Engineering Network/Management System ABB(Bangalore)
Mr. K. Satheesh Kumar	Director, Map World Technologies Ltd.
Mr. Maj. Shiva Kiran	Editorial Associate, GIS India



## インド国アンドラプラディッシュ州配電改善計画調査 面談者

## 第 3 次現地調査

## Embassy of Japan

Mr. H. Kobayashi	Counsellor
Mr. M. Sakuramachi	First Secretary (Commercial)

## JICA India Office

Mr. T. Sakai	Resident Representative
Mr. T. Matsumoto	Assistant Resident Representative

## APTRANSCO

Mr. J. V. Pandurangam	Director/Project
Mr. D. Ramakrishna Rao	CE/DFID&APL
Mr. Ramakoteswara Rao	DE/DFID
Mr. G. A. Manikya Prabhu	S.E, CTI
Mr. V. D. B. Srinivasa Rao	A.D.E, CTI
Mr. K.Laxmi Narsaiah	S.A.O, CTI
Mr.Chandra Sekhar	A.D.E, Computer center

## APCPDCL

Mr. Dimesh Kumar	Chairman & Managing Director/APCPDCL
Mr. Ganesh Rao	PS to CMD/APCPDCL
Mr. A. Raghavendra Rao	Director / Operation/APCPDCL
Mr. G. Purandar Rao	S.E/O&M/Corporate Office
Mr. J. Sreenivas Reddy	S.E/Ranga Reddy (South)
Mr. P. Jagathpal Reddy	S.E/Operation/Medak
Mr. Y. Markandaiah	D.E/Operation/Rajendranagar
Mr. K. Raghuma Reddy	D.E/Operation/Saroomnagar
Mr. Ch. Ashok Reddy	D.E/Operation/Sangareddy
Mr. B. Nagaraju	D.E/Meter/APCPDCL
Mr. Venkalayah	D.E/Meters/Sangareddy
Mr. S. Chittaranjan	A.D.E/Operation/Saroomnagar
Mr. N. L. Prabhakar	A.D.E/Gaganpahad
Mr. Bagaiah	A.E/Commecial/Sangareddy
Mr. K. Raju	A.E/Tech/Comm/Sangareddy
Mr. Syod Masood	Addi. Assit. Engineer/OP/Condapur

付録 1 面談者リスト

---

Mr. S. Venkat Krishna	Asst. to ADE/Gaganpahad
Mr. S. Srikanth	Asst. Engineer/Saroomnagar
Mr. K. A. N. Rao	Sub Engineer/Sangareddy
Mr. M. Bhaskar Reddy	Secure meter limited
Mr. N. Nagaraj	SE, RR(N)
Mr. B. Karunakara Rao	Sub-E, Div, Saroomnagar, RR(S)
Mr. L. Radha Krishna	DE, Operation
Mr. Mohad Mazhar Ali	AAE, Tech.RR(S)
Mr. K. Rajeswar	DE, Technical, RR(S)
Mr. K. Rajender	AE, Operation, Kattedan, RR(S)
Mr. M. Sudhakar Reddy	DE, Technical , RR(N)
Mr. S. Ravi Kumar	ADE, Cpmmercial, RR(N)
Mr. N. Sudhakar	AEE, Technical, RR(N)
Mr. P. Jagathpal Reddy	SE, Operation, Sangareddy
Mr. K. Vankat Reddy	DE, Technical, Sangareddy
Mr. Md. Masood	AEE, Malkapur, Sangareddy
Mr. K. Bagaiah	AE, Commercial, Sangareddy
Mr. Krishna Murthy	ADE, Operation, Sadasivapet, Sangareddy
Mr. G. Gnana Shekav	Sub-Engineer, Sanga Reddy (Malkapur)
Mr. G. Manohar	AE/Commercial, Sanga Reddy (Malkapur)
Mr. Venkatech	Sanga Reddy (Malkapur)
Mr. L.N. Plabhakee	ADE/Operation, Gaganpahad (Kattedan)
Mr. Praveen Kumar	Gaganpahad (Kattedan)
Mr. Nazar Nawaz	Saroomnagar (Kothapet)
Mr. G. Jayaprakash Das	A.E (Tech), SCADA Center
Mr. G. Ravinder	Sub. Engineer, SCADA Center
Mr. P. Srinivasulu	A.A.E, SCADA Center
Mr. T. Vishnu Vardhan Reddy	A.D.E, LSTC
Mr. D. Nagender Naik	A.E LSTC
Mr. C. Rama Mohan Rao	Director, HRD & P&MM
Mr. Subba Rao	C.E, Operation
Mr. I. V. Raghava Rao	P.O
Mr. K. N. Rao	A.S
Mr. Ramamohan Meda	D.E, SCADA Project
Mr. Radha Krishna	D.E, Energy Audit
Mr. Raghma Reddy	D.E
Mr. A. Manohan	A.E

Other

Mr. S.R.Vijayan	Mnager-Engineering Network/Management System ABB(Bangalore)
Mr. B.S. Varma	Director GECE
Mr. K. Satheesh Kumar	Director, Map World Technologies Ltd.
Mr. B. S. Varma	Director, Global Energy Consulting Engineers
Mr. M. V. S. Birinchi	Advisor (Power & Energy), ESCI
Mr. K. Satheesh Kumar	Director, Map World

インド国アンドラプラディッシュ州配電改善計画調査 面談者

第4次現地調査

Embassy of Japan

Mr. H. Kobayashi

Counsellor

JICA

Mr. T. Sakai

Resident Representative

Mr. K. Ito

Deputy Resident Representative

APTRANSCO

Mr. J. V. Pandurangam

Director, Projects

Mr. Satyanarayana Murthy

C.E/DFID&APL

Mr. Ramakosteswara Rao

DE, DFID

Mr. Sundaraiah

CE/Telecom

Mr. S. Sivakumar Varma

ADE/Telecom

Ms. Anurga

ADE/Telecom

Mr. Peshi

Director/HRD, PLG&RD

Mr. Chandra Sekhar

A.D.E

Mr. A. V. Sessaiah

A.E/DFID&APL

Mr. G. A. Manikya Prabhu

S.E/CTI

Mr. V. D. B. Srinivasa Rao

A.D.E/CTI

APCPDCL

Mr. Dimesh Kumar

Chairman & Managing Director/APCPDCL

Mr. G. Purandar Rao

SE/O&M

Mr. Ramamohan Meda

SE/Assesments

Mr. Subba Rao

DE/SCADA

Mr. Srinivasa Chary

ADE/SCADA

Mr. Ch. Chakrapari

ADE/SCADA Project

Mr. Ragendar Singh

AE/CBD/Asif Nagar SS

Mr. Upender Reddy

Vanastlipuram SS

Mr. V. Bangalaiah

SE, RR(S)

Mr. S. Srikanth

AE, Saroomagar, RR(S)

Mr. P. Veereshalingam

Sub-E, Sadasivepet, Sangareddy

Mr. K. Rajeswar

DE, Technical, RR(S)

Mr. Hemachandler	ADE, Commercial, RR(S)
Mr. D. L. Prabhakar	ADE, Gaganpahad, RR(S)
Mr. K. Rajender	AE, Operation, Kattedan, RR(S)
Mr. Y. Markandaiah	DE, Operation, Rajendranagar, RR(S)
Mr. K. Raghuma Reddy	DE, Operation. Saroornagar, RR(S)
Mr. G. Amuruthaiah	DE, Technical , RR(N)
Mr. M. Sudhakar Reddy	DE, Technical , RR(N)
Mr. S. Ravi Kumar	ADE, Cpmmercial, RR(N)
Mr. N. Sudhakar	AEE, Technical, RR(N)
Mr. P. Jagathpal Reddy	SE, Operation, Sangareddy
Mr. K. Vankat Reddy	DE, Technical, Sangareddy
Mr. Md. Masood	AEE, Malkapur, Sangareddy
Mr. K. Bagaiah	AE, Commercial, Sangareddy
Mr. Krishna Murthy	ADE, Operation, Sadasivapet, Sangareddy
Mr. K. Raju	AE, Technical, Sangareddy
Mr. Ch. Ashok Reddy	D.E/Operation/Sangareddy
Mr. S. Chittaranjan	A.D.E/Operation/Saroornagar
Mr. N. L. Prabhakar	A.D.E/Gaganpahad
Mr. S. Srikanth	Asst. Engineer/Saroornagar
Mr. K. A. N. Rao	Sub Engineer/Sangareddy
Mr. M. Hanumat Sai	Computer in charge at ERO/peration/Saroornagar
Mr. S. Venkat Krishna	Asst. to ADE/Gaganpahad
Mr. Venkalayah	D.E/Meters/Sangareddy
Mr. Bagaiah	A.E/Commecial/Sangareddy
Mr. Venkatech	Gaganpahad (Kattedan)
Mr. L.N. Plabhakee	ADE/Operation, Gaganpahad (Kattedan)
Mr. L. Radha Krishna	DE/EA
Mr. P. Jagathpal Reddy	S.E/Operation/Medak
Mr. Er. S. Sreekanth	A.A.E/Operation/Saroornagar
Mr. T. Vishnu Vardhan Reddy	A.D.E/LSTC
Mr. E. Jagan Mohan	S.E/Master Plan Circle
Mr. L. Radha Krishna	D.E, Energy Audit
Mr. Veereshalingan	Sub-engineer/Sadasiyepet
Mr. Y. K. Reddy	D.E/Master Plan
Mr. N. S. R. Murthy	A.D.E/Master Plan
Mr. K. Narashinga Rao	A.D.E/Master Plan
Mr. D. Nagender Naik	A.E/LSTC
Mr. Manohar	A.E

付録 1 面談者リスト

---

Mr. K. Subhas Chandra Bose                      D.E/Construction/City North  
Mr. L. Laxminarayana                              A.D.E/construction/City North

Other

Mr. S. R. Vijayan                      Mnager-Engineering Network/Management System ABB(Bangalore)  
Mr. Pankaj Prandhan                              Reliance  
Mr. Pavan Kumar                                  Reliance  
Mr. K. Satheesh Kumar                              Director, Map World Technologies Ltd.

CIRE

Dr. P. S. Rao,    Additional Director/CIRE  
Dr. M. Y. Reddy                                      CIRE  
Dr. R. Mohamed Nafi                                  Deputy Director/CIRE  
Mr. S. V. Murty                                      Program Coordinator/The Institute of Indian Foundrymen,  
Research & Development Center, Technology Upgradation  
Programme(A.P.)

ESCI

Mr. C. S. Sastry                                      Deputy Director/ESCI  
Dr. S. Nagabhushana Rao                              Director/ESCI  
Mr. J. Balakrishna Rao                                  Senior Faculty/Power & Energy Division/ESCI  
(Formerly C.E/APTRANSCO)  
Dr. C. Radhakrishna                                  Director & Professor of Electrical Engg.  
/UGC-Academic Staff College)

## インド国アンドラプラディッシュ州配電改善計画調査 面談者

## 第5次現地調査

## Embassy of Japan

Mr. H. Kobayashi	Counsellor
------------------	------------

## JICA India Office

Mr. T. Sakai	Resident Representative
Mr. T. Matsumoto	Assistant Resident Representative
Mr. K. Ito	Deputy Resident Representative

## APTRANSCO

Mr. J. V. Pandurangam	Director/Projects Construction
Mr. G. Kasava Rao	Director/Transmission & Grid Operation
Mr. Satyanarayana Murthy	C.E/DFID&APL
Mr. Ramakosteswara Rao	DE, DFID
Mr. R. Ashokachary	DE/OECF
Mr. Chandra Sekhar	A.D.E
Mr. A. Seshaiiah	AE
Mr. S. Subramanyam	DE/APL
Mr. T. S. Haranadha Rao	ADE
Mr. K. Vidyadhari	ADE
Mr. O. Haripasad	ADE

## APCPDCL

Mr. Dimesh Kumar	Chairman & Managing Director/APCPDCL
Mr. G. Purandar Rao	SE/O&M
Mr. Ramamohan Meda	SE/Assesments
Mr. U. Vidyasagar	ADE/T to CMD
Mr. G. Vinay Kumar	Director/Operation
Mr. G. Pedda Bapulu	CGM/Operation
Mr. L. Radha Krishna	DE/Operation
Mr. B. Krishna Murthy	SE/Operation/Ranga Reddy South
Mr. K. Rajeswar	DE
Mr. Y. Markandaiah	DE/Operation/Rajendranagar
Mr. D. L. Prabhakar	ADE/Gaganpahad
Mr. K. Rajendar	AE/Operation/Kattedan

付録 1 面談者リスト

---

Mr. K. Raghuma Reddy	SE/Operation/Saroornagar
Mr. Chittaranjan	ADE/Operation/Saroornagar
Mr. Srikanth	AAE/Operation/Saroornagar
Mr. S. Sitaram Babu	AGM/IT
Mr. P. Jagathpal Reddy	SE/Operation/Medak
Mr. Amarnath	AE/Technical/Sanga Reddy
Mr. Bagaiah	AE/Commercial/Sanga Reddy
Mr. Syed Masood	AAE
Mr. R. Krishna Murthy	ADE/Operation
Mr. N. S. R. Murthy	ADE
Other	
Dr. P. S. Rao	Additional Director/CIRE
Mr. G. Shanker	Faculty Member/CIRE



インド国アンドラプラデッシュ州配電改善計画調査

付録2 収集資料リスト



## インド国アンドラプラデッシュ州配電改善計画調査 現地調査収集資料 (配電網の運用・保守)

番号	資料名	著者名	備考
	第 1 次現地調査		
A-1	Information (RR(N))	RR(N), Operation Circle	
A-2	Information (RR)	RR(S), Operation Circle	
A-3	List of Feeders (Medak)	Sangareddy, Operation	
A-4	Break Down Abstract, 30.11.02	Operation	
A-5	Grid Map (Medak)	Sangareddy, Operation	
	第 2 次現地調査		
A-6	The daily maximum and minimum frequencies for the month of May, June, July and November 2002	LDC, APTRANSCO	
A-7	Voltage Record (Kothapet)	RR(S), Operation Circle	
A-8	Voltage Record (Kattedan)	RR(S), Operation Circle	
A-9	Voltage Record (Malkapur)	Sangareddy, Operation Circle	
A-10	Grid Map (Medak)	Sangareddy, Operation	
	第 3 次現地調査		
A-11	Outage Records (Ranga Reddy)	RR(S), Operation Circle	PC to PC
A-12	Outage Records (Medak)	Operation Circle Medak	Hand Written
A-13	Action Plan for Preventive Maintenance of Lines and transformers 2003-04	Sangareddy, Operation	
A-14	Collection of data to conduct the survey on quality of supply	Sangareddy, Operation	

番号	資料名	著作者名	備考
A-15	Voltage Record (Kattedan #2)	RR(S), Operation Circle	
A-16	List of 33 kV feeders having load relief from 0.00-02.00 & 12:00 to 14:00 Hrs	Sangareddy, Operation	
A-17	Operation status of substations & feeders	Sangareddy, Operation	
A-18	GRID CODE for APTRANSCO	APREC	Web Site of APREC
A-19	Slip of Line Relief (Permit Medak)	Sangareddy, Operation	
A-20	Operation manual of substation	RR(S), Operation Circle	
	第 4 次現地調査		
A-21	Section wise Distribution Transformers and Length of Lines	RR(S), Operation Circle	
A-22	Subdivision wise 33/11 kV SS with PTR Capacitors and 11 kV Feeders	RR(S), Operation Circle	
A-23	Daily Report (Power Supplied through 11 kV Feeders)	RR(N), Operation Circle	
A-24	List of 132/33 kV Substation, 33 kV Feeders, 33/11 kV substations, 11 kV Feeders	Operation Circle Medak	
A-25	M.I.S. for Month of September, 2003	Operation Circle Medak	
A-26	Grid Map (Ranga Reddy)	APTRANSCO, DFID	
A-27	Grid Map (Medak)	APTRANSCO, DFID	
A-28	District wise Hourly quota and Demand in MW	O & M	
A-29	District wise Hourly quota and Demand in MW	O & M	
A-30	District wise Hourly quota and Demand in MW		Web site of APTRANSCO
A-31	Highlights, 2003	APTRANSCO, DFID	

## インド国アンドラプラデッシュ州配電改善計画調査 現地調査収集資料 (SCADA システム)

番号	資料名	著者名	備考
	第 1 次現地調査		
B-1	HYDERABAD CITY INTEGRATED SCADA PROJECT	ABB	
B-2	COMMUNICATION SYSTEM IN APTRANSCO	APTRANSCO/Telecom	
	第 2 次現地調査		
B-3	Development of 'Distribution Automation' Project at 33/11 KV Gachibowli SS Jointly with M/s CMC Limited - Administrative sanction -	APSE BOARD	
B-4	Material Regarding Substation Online Diagram etc.	SCADA Center	Computer Print Out
	第 3 次現地調査		
B-5	SCHEDULE OF ELECTRICITY TARIFF 2002-2003 POWER TARIFFS WITH EFFECT FROM 1-4-2002	APCPDCL	
B-6	CENTRAL POWER DISTRIBUTION COMPANY LIMITED Control Instruction No 6 CONTROL BOUNDARY SPLIT-POINTS	APCPDCL	
B-7	Material Regarding Construction Cost of SCADA Center	APSEB	Price Shedule
B-8	Hyderabad Feeder Map (Cityit I~CityIX)	APCPDCL	
B-9	APCPDCL LINES DIVISION-I SCADA CIRCLE (4/2003)	SACDA Center	Data Book of Electricity Supply
B-10	APCPDCL LINES DIVISION-I SCADA CIRCLE (5/2003)		
B-11	APCPDCL LINES DIVISION-II SCADA CIRCLE (4/2003)		
B-12	APCPDCL LINES DIVISION-II SCADA CIRCLE (5/2003)		

番号	資料名	著作者名	備考
	第4次現地調査		
	(Nothing)		

## インド国アンドラ Pradesh 州配電改善計画調査 現地調査収集資料 (配電設備の改善)

番号	資料名	著作者名	備考
	第 1 次現地調査		
C-1	Secure meter pamphlet	Secure meter limited	
C-2	第 2 次現地調査		
C-3	Diary (2003-2004)	APTRANSCO	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-4	DTR WISE PHYSICAL LAYOUTS AND POLE TO POLE SURVEY REPORT(11KV KAMALANAGAR FEEDER)	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-5	CHART OF DTR CONNECTION (KATTEDAN #2 FEEDER)	CPDCL	Mr.N. L. Prabhaker,A.D.E/Gaganpahad
C-6	CHART OF DTR CONNECTION (MALKAPUR FEEDER)	CPDCL	Mr.Syod Masood ,Addi. A.E/Condapur
C-7	Feeder specification (Kamalanagar feeder)	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-8	Feeder specification (Kattedan #2 feeder)	CPDCL	Mr.N.L. Prabhaker,A.D.E/Gaganpahad
C-9	Feeder specification (Malkapur feeder)	CPDCL	Mr.Bagaiah, A.E/Sangareddy
C-10	Existing standard of distribution facilities	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-11	Specification of existing distribution facilities	CPDCL	Mr.N.L.Prabhaker,A.D.E/Gaganpahad
C-12	Construction Cost of distribution facilities	CPDCL	Mr.Bagaiah, A.E/Sangareddy
C-13	Power demand of feeder (Kamalanagar feeder)	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-14	Power demand of feeder (Kattedan #2 feeder)	CPDCL	Mr.N.L.Prabhaker,A.D.E/Gaganpahad
C-15	Power demand of feeder (Malkapur feeder)	CPDCL	Mr.Bagaiah, A.E/Sangareddy
C-16	CHART OF 11KV KATTEDAN #2 FEEDER	CPDCL	Mr.N.L.Prabhaker,A.D.E/Gaganpahad
	第 3 次現地調査		

番号	資料名	著作者名	備考
C-17	Measuring data (Kamalanagar feeder)	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-18	Measuring data (Kattedan #2 feeder)	CPDCL	Mr.N.L.Prabhaker,A.D.E/Gaganpahad
C-19	Measuring data (Malkapur feeder)	CPDCL	Mr.Bagaiah, A.E/Sangareddy
	第4次現地調査		
C-20	L.T. SKETCHES OF FEEDER NO-II IN DISTRIBUTION TRANSFORMERS FOR KATTEDAN SECTION	CPDCL	Mr.Rajendar,A.E/Kattedan
C-21	Measuring data (Kamalanagar feeder)	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-22	Measuring data (Kattedan #2 feeder)	CPDCL	Mr.N.L.Prabhaker,A.D.E/Gaganpahad
C-23	Measuring data (Malkapur feeder)	CPDCL	Mr.Bagaiah, A.E/Sangareddy
C-24	Result of load at substation (KOTHAPET SS)	CPDCL	Mr.S.Chittaranjan,A.D.E/Saroomnagar
C-25	Result of load at substation (KATTEDAN SS)	CPDCL	Mr.N.L.Prabhaker,A.D.E/Gaganpahad
C-26	Result of load at substation (MALKAPUR SS)	CPDCL	Mr.Bagaiah, A.E/Sangareddy



## インド国アンドラプラデッシュ州配電改善計画調査 現地調査収集資料 (GISによる設備・顧客管理)

番号	資料名	著作者名	備考
	第1次現地調査		
	(Nothing)		
	第2次現地調査		
D-1	Consumer Analysis Tool	APDCDCL	
D-2	Sixteenth Electric Power Survey of India	Central Electricity Authority	
D-3	Schedule of Retail Tariff Rates and Terms & Conditions	APDCDCL	
D-4	Economic Survey 2001-2002	Government of Andhra Pradesh	
D-a	Questionnaire for the 4th investigation (23-10-2003)	JICA Study Team	To D.E./construction/City North
	第3次現地調査		
	(Nothing)		
	第4次現地調査		
D-5	Hyderabad, Ranga Reddy South & North, Medak の変電所リスト	APCPDCL	

インド国アンドラプラデッシュ州配電改善計画調査 現地調査収集資料 (研修設備および研修プログラム)

番号	資料名	著作者名	備考
	第3次現地調査		
E-1	Course material on transmission and power System	CTI	For induction training
E-2	Course material on M.R.T induction training course for trainee assistant engineers	CTI	For induction training
E-3	Course material on distribution and rural electrification	CTI	For induction training
E-4	Course material on boards culture, office procedures & accounting module	CTI	For induction training
E-5	The Indian Electricity Act, 1910 with important case law	ADL Publications	For induction training
E-6	The A.P Electricity Reform Act, 1998 & The A.P Electricity Reform Rules, 1999 with important case law	ADL Publications	For induction training
E-7	Indian Electricity Rules, 1956	ADL Publications	For induction training
E-8	The Electricity (Supply) Act, 1948 with important case law	ADL Publications	For induction training
E-9	Andhara Pradesh Power Sector Reforms Powering the New Millennium	APTRANSCO	For induction training
E-10	Grid Map of Andhara Pradesh as on 31.3.2001	APTRANSCO	For induction training
E-11	Terms and Conditions of Supply of earst while APSE Board applicable to APTRANSCO as per condition 12 of provisional retail supply license granted by Govt. of AP in G.O.Ms. No.11 Energy (Power-III) dt. 30.01.1999. 20th October 1975 (Amended up to 30.01.1999)	APTRANSCO	For induction training
E-12	Line man safety guideline (written by Telugu)	CPDCL	For induction training
E-13	Course material for sub engineers 33/11KV, Substation	CPDCL	
E-14	Course material on Accounts & Administrative procedure for LDC's /	CPDCL	

番号	資料名	著作者名	備考
	LD Steno's /Typists		
E-15	Training manual O & M of Distribution systems 17-21 January 2002	APTRANSCO	
E-16	S.P.I.D.E.R Training S.P.I.D.E.R Basics Course S10	ABB Network Partner	
E-17	Executive Orientation Workshop, Workshop Manual	APTRANSCO	
E-18	Executive Orientation Workshop, 2nd to 4th February 2000, CIRE	CIRE	
E-19	Train the "Trainers", Individual Training Kit, November 14-16, 2000	Arthur Andersen	
E-20	Power Development in Andhara Pradesh (Statistics) 2000-2001	APTRANSCO	
E-21	Administration Report 1998-99 (1-2-1999 to 31-01-1999)	APTRANSCO	
E-22	Future layout of CTI	CTI	
E-23	Answer for the questionnaire of Maintenance, Management and Training for APDPDCL	APCPDCL	
E-24	Annual Training Plan for the year 2003-2004 (Transco, Discoms)	CTI	
E-25	Annual Training Calendar for the year 2003-2004 at LSTC/ CPDCL/ Hyderabad	LSTC	
E-26	Computer specifications	CTI	
E-27	Organization chart of APTRANSCO as on 01-05-2003	APTRANSCO	
E-28	Corporate Training Institute , Hyderabad -45, Organization Chart as on 20-02-2003	CTI	
E-29	Organization Chart of CPDCL as on June 2003	CPDCL	
E-30	Organization Chart of LSTC (Hyd)/ CPDCL as on June 2003	LSTC	

番号	資料名	著作者名	備考
E-31	Complaint form	CPDCL	
E-32	SCADA by Mr. Ramamohan Meda	SCADA Center	
E-a	Questionnaire of Maintenance, Management and Training for CTI (List of data to be collected)	JICA Study Team	
E-b	Questionnaire of Maintenance, Management and Training for APCDCL (List of data to be collected)	JICA Study Team	
	第 4 次現地調査		
E-33	Trade (News letter)	APTRANSCO	
E-34	CALENDAR OF TRAINING PROGRAMMES 2003-2004	CIRE	
E-35	CALENDAR OF TRAINING PROGRAMMES 2002-2003	CIRE	
E-36	ESCIA Profile	ESCI	
E-37	Calendar of Training Programmes April 2003 - March 2004	ESCI	
E-38	ESCI communications Jul - Sep 2003 (News letter)	ESCI	
E-39	Programme on Renovation & Modernisation of Power Distribution Systems	ESCI	Course material
E-40	2000-2001 ANNUAL REPORT	CPDCL	
E-41	ORGANIZATION CHART OF AP.TRANSCO AS ON 30-09-2003	APTRANSCO	
E-42	Organization Chart of CPDCL as on 24-10-2003	CPDCL	
E-43	Working Estimate (Reinforcement of Dog conductor in place of ACSR 7/1.44 conductor on 33kV Line)	CPDCL	Master Plan Circle Office
E-44	Estimate for shifting of 11kV/LT poles and lines	CPDCL	Construction Wing (City North)

番号	資料名	著作者名	備考
E-45	Improve Estimate for erection of 100kVA Distribution Transformer	CPDCL	Construction Wing (City North)
E-46	Estimated cost of CTI at Present Rates	CTI	
E-47	Construction Cost of distribution facilities	CPDCL	Mr.Higashinaka
E-48	COMMENTS ON INTERIM REPORT CHAPTER 7	CTI	Mr.Manikya Prabhu, S.E/CTI
E-49	Comments on Interim Report	CTI	Mr.Srinivasa Rao, A.D.E/CTI
E-50	緊急連絡網 JICA インド事務所 (2003 年 10 月 8 日現在)	JICA India	
E-51	緊急連絡網 JICA インド事務所 (2003 年 10 月 1 日現在)	JICA India	
E-52	ITC Kakatiya Sheraton Hotel, Hyderabad room rate (09-09-2003)	ITC Kakatiya Sheraton	
E-53	ITC Kakatiya Sheraton Conference, Seminars, Events rates	ITC Kakatiya Sheraton	
E-54	TAJ BANJARA, Hyderabad Conference and Banquets rates	TAJ BANJARA	
E-55	Hotel Amruiha Castle Conference and Banquets rates	Hotel Amruiha Castle	
E-c	Questionnaire for the 4th investigation (10-10-2003)	JICA Study Team	To S.E./Assessment/CPDCL
E-d	Request for comments of the Interim Report Chapter 7 (13-10-2003)	JICA Study Team	To S.E/CTI, A.D.E/LSTC
E-e	Questionnaire for the 4th investigation (14-10-2003)	JICA Study Team	To S.E/Op./CPDCL
E-f	Questionnaire for the 4th investigation (17-10-2003)	JICA Study Team	To S.E/Master Plan Circle
E-g	Questionnaire for the 4th investigation (23-10-2003)	JICA Study Team	To D.E/construction/City North



# インド国アンドラプラディッシュ州配電改善計画調査

## 付録3 議事録 / メモランダム





*Minutes of Meeting*

for

**The Development Study on the Improvement of Power Distribution System of Andhra Pradesh in India**

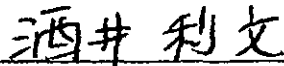
**Agreed Upon Between**

**Japan International Cooperation Agency (JICA) Study Team**

and

**The Transmission Corporation of Andhra Pradesh Limited**

Hyderabad, 11 February 2003



Mr. Toshifumi Sakai  
Resident Representative of JICA  
India Office

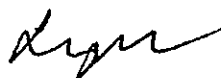


J. V. Pandurangam  
Director (Projects)  
Transmission Corporation of  
Andhra Pradesh Limited  
(APTRANSCO)

 11/2/03

S. Surya Prakasa Rao  
Director (Commercial & Projects)  
Central Power Distribution  
Company of Andhra Pradesh  
Limited (APCPDCL)





The Study Team (hereinafter referred to as "the JICA Team") , on "The Development Study on the Improvement of Power Distribution System of Andhra Pradesh in India (hereinafter referred to as "the Study"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), represented by Mr. Toshifumi Sakai, had a series of discussions regarding the implementation plan of the Scope of Work (hereinafter referred to as "S/W") signed on 29 May 2002 with the officials of Transmission Corporation of Andhra Pradesh Limited (hereinafter referred to as "APTRANSCO") and Central Power Distribution Company of Andhra Pradesh Limited (hereinafter referred to as "APCPDCL") on 10 and 11 February 2003.

The JICA Team and APTRANSCO&APCPDCL have examined and confirmed that the implementation plan met the S/W.

But to avoid misunderstanding, both sides have also agreed on revised Articles of the S/W as follows:

**1. Article II of S/W (OBJECTIVE OF THE STUDY)**

The objective of the Study is to establish the methodology of an integrated solution package for loss reduction of distribution network covering facility improvement, operation & maintenance, and facility & customer management by use of GIS and to provide technical transfer of the methodology for replication.

**2. Article III of S/W (THE STUDY AREA)**

The selected districts are Ranga Reddy and Medak District

**3. Article IV of S/W (SCOPE OF THE STUDY)**

1. The methodology of an integrated solution package for loss reduction of distribution network shall be established covering the following aspects: facility improvements, operation & maintenance, and facility & customer management by use of GIS as detailed below.

**(1) Facility Improvements**

- a. Survey of Distribution Facilities
- b. Physical Improvement of Distribution Facilities
- c. Construction Plan of Distribution Facilities



- (2) Operation & Maintenance
  - a. Data collection
  - b. Data analysis
  - c. Recommendation
  
- (3) Facility & Customer Management by Use of GIS
  - a. Introduction of Basic Module of GIS
  - b. Identification of Area of GIS Mapping
  - c. Data Collection and Input Procedure
  - d. Expected Effect of GIS Mapping
  - e. Method of Field Survey and Technology Transfer

2. SCADA System

- a. Assessment of the Existing SCADA System
- b. Study of Distribution SCADA Introduction
- c. Recommendation of Distribution SCADA System

3. Technical transfer of the above methodology shall be provided in order for the Indian counterpart to be capable of replicating the loss reduction measures established in the same methodology.

ANNEX : Work Schedule



ANNEX Work Schedule (Tentative)

Position	Fiscal Year 2002												Fiscal Year 2003											
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3							
Team Leader/Distribution Line																								
Operation & Maintenance																								
Distribution Line Planning																								
Corporate Management																								
GIS (1)																								
GIS (2)																								
SCADA System																								
Training																								
(Facility Improvement)																								
Water Intelligibility																								
Low measurement																								
Survey of feeder data (residential)																								
Survey of feeder data (agriculture, industry)																								
Analysis (low calculation) for residential																								
Analysis for agriculture & industry																								
Physical improvement plan for residential																								
Physical improvement plan for agriculture & industry																								
Construction Plan of Distribution Facilities																								
(Operation & Maintenance)																								
Data collection																								
Data input to PC																								
Data analysis																								
Data analysis																								
Discussion/recommendation																								
(Quality & Customer Management by Use of GIS)																								
Explanation of GIS construction																								
Preparation of GIS																								
Position measuring by counterpoint																								
Data collection																								
Input data to Excel file																								
Map utilization																								
Importing data file to GIS																								
Making GIS manual																								
Guidance for GIS operation																								
(SCADA System)																								
Data collection and analysis																								
Improvement and introduction study																								
Improvement proposal																								
(Training)																								
Survey of existing training center and related information																								
Preparation/explanation of recommendation																								
Secretary																								

MEMORANDUM  
OF  
SECOND SURVEY  
OF  
JICA DEVELOPMENT STUDY  
ON  
IMPROVEMENT OF POWER DISTRIBUTION SYSTEM  
OF  
ANDHRA PRADESH IN INDIA  
  
AGREED UPON BETWEEN  
THE JICA STUDY TEAM  
AND  
THE TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED


Hyderabad, 10 March 2003

工藤義行

Yoshiyuki Kudo  
Team Leader  
JICA Study Team



J.V. Pandarangan  
Director (Projects)  
Transmission Corporation of  
Andhra Pradesh Ltd.  
(APTRANSCO)



S. Surya Prakasa Rao  
Director (Commercial & Projects)  
Central Power Distribution  
Company of Andhra Pradesh Ltd.  
(APCPDCL)

## I. General

This memorandum covers the activities conducted by JICA study team in the period from 10 November 2002 through 10 March 2003 in the state of Andhra Pradesh.

The minutes of meeting was signed on 11 February 2003 between APTRANSCO/APCPDCL and JICA to confirm the implementation plan of the Scope of Work signed on 29 May 2002 between APTRANSCO and JICA, with both sides agreeing on the revised articles of the above Scope of Work. (See Annex-1)

At the same time, the Progress Report describing the above implementation plan was submitted in 30 copies and explained in outline by JICA study team to APTRANSCO/APCPDCL and accepted by APTRANSCO/APCPDCL. (See Annex-5)

It is to be noted that for the mixed load the feeder has been changed from Huda Complex to Kamalanagar because of the length of LV line.

## II. Seminar

A seminar was held on 18 February 2003 at Hotel Amrutha Castle in Hyderabad to present the methodology to be adopted for a study on loss reduction of distribution network by explaining in detail the Progress Report and to make an exchange of opinions on the methodology between the participants in the seminar and JICA study team. The participants in the seminar are listed in Annex-2.

The seminar consisted of four sessions according to the scope of the study:(1) facility improvements, (2) operation and maintenance, (3) facility and customer management by use of GIS and (4) SCADA.

The methodology presented in the seminar was accepted by the participants in the seminar and APTRANSCO/APCPDCL.

The seminar material is attached herewith as Annex-6.

## III. Work Schedule

### i) Selection of feeders for Case Study

The feeders for Case Study was selected between November 2002 and February 2003 as follows:

For the mixed load in Ranga Reddy: feeder Kamalanagar

For the industrial load in Ranga Reddy: feeder Kathedan No.2

For the agricultural load in Medak: feeder Malkapur

### ii) Installation of electronic energy meters

This work started in first week of March to complete by the middle of March 2003 by APCPDCL.

The total number of the meters to be installed is follows.

	Meter for outgoing of the feeder	Meter for transformer	Volt meter at end user	KWH meter at pump set
KAMALA NAGAR		33	3	
KATHEDEN No2		40	8	
MALKAPUR	1	15	1	16
TOTAL	1	88	12	16

iii) Meter reading

Meter reading will be conducted monthly by APCPDCL until the end of June 2003.

Reading data will be sent monthly to the JICA Team in Japan by APCPDCL using e-mail when the JICA Team is staying in Japan.

iv) Case Study by JICA study team for the mixed load in Ranga Reddy

This will be conducted in May and June 2003.

v) Replication by the Indian counterpart for the industrial load in Ranga Reddy and the agricultural load in Medak

This will be conducted in July and August 2003.

vi) General work schedule

For general work schedule until the submission of the Final Report, see Annex-3.

IV. Allocation of Undertakings

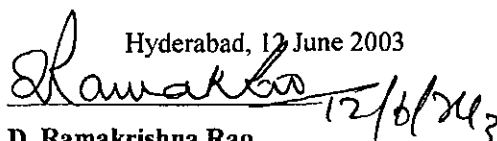
Allocation of undertakings that the study team and India-side should carry out, and required equipment and materials are mentioned in Annex-4.

MEMORANDUM  
OF  
THIRD SURVEY  
OF  
JICA DEVELOPMENT STUDY  
ON  
IMPROVEMENT OF POWER DISTRIBUTION SYSTEM  
OF  
ANDHRA PRADESH IN INDIA

AGREED UPON BETWEEN  
THE JICA STUDY TEAM  
AND  
TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

工藤 義行

Yoshiyuki Kudo  
Team Leader  
JICA Study Team

Hyderabad, 12 June 2003  


D. Ramakrishna Rao  
Chief Engineer (DFID & APL)  
Transmission Corporation of  
Andhra Pradesh Limited  
(APTRANSCO)



**I. General**

This memorandum covers the activities conducted by JICA study team (the Team) in the period from 20 May 2003 through 12 June 2003 in the state of Andhra Pradesh.

**II. Operation and Maintenance**

The Team will bring back all collected data and analyze the data in Japan. However, there are still many data that have not been collected from both Medak and Ranga Reddy Districts. Accordingly, APTRANSCO and APCPDCL are requested to devote themselves more time in collecting the remaining data earnestly while the Team stays in Japan.

Technical transfer on the data analysis will be conducted during the fourth (4<sup>th</sup>) on-site visit to India, which is scheduled in September 2003. Counterpart personnel of APTRANSCO and APCPDCL will collect and analyze the remaining data by themselves.

The results of analysis will be presented by the counterparts at the workshop, which is planned on the fifth (5<sup>th</sup>) on-site survey in India, which is scheduled in December 2003.

The data so far collected is as follows

As of June 10, 2003				
District	33kV feeder	11kV feeder	LV feeder	Remarks
RR(S)+(N)	58(9)	364(179)	(0)	
Medak	79(0)	402(36)	(0)	
Total	137(9)	766(215)	(0)	

Figures show estimated number of feeders.

( ) indicates number of data collected by the Team.

**III. Distribution Line**

Mr. Keiji Higasinaka, the responsible member of the Team will be in Hyderabad on 27 June 2003. His departure from Japan and arrival in Hyderabad is behind schedule due to unavoidable circumstances brought about by acquisition of data for his analysis work.

**IV. GIS and GIS Database**

The team will set up GIS equipment in six (6) offices. The team owns these equipment during the study period and these should be kept properly while the Team is in Japan. The team requested the counterparts to keep and manage these equipment until fifth (5<sup>th</sup>) on-site survey in India.

Following is the list of equipment.

Office	Equipment
APTRANSCO	Desktop computer, GPS, MS Windows XP professional, MS Office, Arc View 8.3
APTRANSCO	Desktop computer, GPS, MS Windows XP professional, MS Office, Arc View 8.3
Kothapet regional office	Desktop computer, GPS, MS Windows XP professional, MS Office, Arc View 8.3, HP printer, Digital camera
Kattedan regional office	Desktop computer, GPS, MS Windows XP professional, MS Office, Arc View 8.3, HP printer, Digital camera
Sanga Reddy circle office	Desktop computer, GPS, MS Windows XP professional, MS Office, Arc View 8.3, HP printer, Digital camera
APCPDCL	Desktop computer, GPS, MS Windows XP professional, MS Office, Arc View 8.3

#### V. Security

In response to the request from JICA Delhi Office, the Team requested APTRANSCO and APCPDCL to provide one policeman to accompany the Team for security when they visit Medak District. APTRANSCO and APCPDCL pleasantly agreed this request and dispatched appropriate person

#### VI. Counterpart training

The team requested to nominate a total of four (4) persons for counterpart training. These personnel shall be nominated from counterparts of APTRANSCO and APCPDCL. APTRANSCO and APCPDCL agreed to nominate four (4) persons for training by 17 June 2003. Counterpart training will be held in Japan for two (2) weeks this coming October 2003.

#### VII. Schedule

The future schedule is attached herewith at Annex – 1

Annex - 1 Schedule of the Study for Fiscal Year 2003

Name	Position	2003												2004			
		4	5	6	7	8	9	10	11	12	1	2	3				
Mr. Yoshiyuki KUDO	Team Leader/ Distribution Line			■				▨					▨				
Mr. Takeshi ICHIKAWA	Operation/ Maintenance		■					▨					▨				
Mr. Kenji HIGASHINAKA	Distribution Line				■			▨					▨				
Mr. Sinji OMOTEYAMA	GIS				■			▨					▨				
Mr. Shigenari MATSUMURA	SCADA System			■				▨					▨				
Mr. Kenichi KUWAHARA	GIS Database			■				▨					▨				
Mr. Tetsuya YAMANAKA	Maintenance/ Management/ Training			■				▨					▨				
Mr. Kanji SUZUKI	Coordinator			■				▨					▨				
Interim Report																	
Draft Final Report																	
Final Report																	△
Workshop																	△

Note : ■ 3rd on-site survey  
 ▨ 4th on-site survey  
 ▨ 5th on-site survey

MEMORANDUM  
OF  
THIRD SURVEY  
OF  
JICA DEVELOPMENT STUDY  
ON  
IMPROVEMENT OF POWER DISTRIBUTION SYSTEM  
OF  
ANDHRA PRADESH IN INDIA

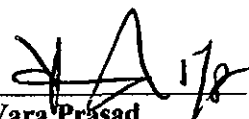
AGREED UPON BETWEEN  
THE JICA STUDY TEAM  
AND  
TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

Hyderabad, 6 August 2003

東中啓二

---

**Keiji Higashinaka**  
Team member  
JICA Study Team



---

**P.L.V. Vara Prasad**  
Chief Engineer (DFID & APL)  
Transmission Corporation of  
Andhra Pradesh Limited  
(APTRANSCO)

**I. General**

This memorandum covers the activities conducted by JICA study team (the Team) in the period from 11 July 2003 through 6 August 2003 in the state of Andhra Pradesh.

**II. Distribution Line**

The Team will bring back all collected data and analyze the data in Japan. However measuring is still conducting as far as the end of August. Accordingly, counterparts of APCPDCL must send measuring data by e-mail after measuring will be over.

Technical transfer on the data analysis will be conducted during the fourth on-site visit to India, which is scheduled in September 2003.

The result of the third survey is as follows :

**1. Number of newly attached meters for measuring**

Substation	Feeder	Category	Meter at mouth of feeder	Meter at DTR	Volt meter at customer	Meter at pump set
KOTHAPET	KAMALA NAGAR	Domestic/Commercial	0	44	3	0
KATTEDAN	KATTEDAN#2	Industrial	0	66	0	0
MALKAPUR	MALKAPUR	Agricultural	1	15	1	16
TOTAL			1	125	4	16

**2. Number of measuring meters**

Substation	Feeder	Category	Meter at mouth of feeder	Meter at DTR	Volt meter at customer	Meter at pump set	KWH meter at customer
KOTHAPET	KAMALA NAGAR	Domestic/Commercial	1	44	3	0	3650
KATTEDAN	KATTEDAN#2	Industrial	1	78	8	0	465
MALKAPUR	MALKAPUR	Agricultural	1	15	1	16	842
TOTAL			3	137	12	16	4957

**3. Project Schedule**

See attachment

project schedule		2003.8.3																												Attachment
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
days	July/August	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		
		Fri	Sat	Sun	Mo	Tu	We	Th	Fri	Sat	Sun	Mo	Tu	We	Th	Fri	Sat	Sun	Mo	Tu	We	Th	Fri	Sat	Sun	Mo	Tu	We	Sat	
meter installation																														
	KOTHAPET																													
	KATTEDAN																													
	MEDAK																													
measuring	KOTHAPET																													
	KATTEDAN																													
	MEDAK																													
data collection	KOTHAPET																													
	KATTEDAN																													
	MEDAK																													
calculation&analyzation	KOTHAPET																													
	KATTEDAN																													
	MEDAK																													
Collection of Feeder Specification	KOTHAPET																													
	KATTEDAN																													
	MEDAK																													

MEMORANDUM  
OF  
FOURTH SURVEY  
OF  
JICA DEVELOPMENT STUDY  
ON  
IMPROVEMENT OF POWER DISTRIBUTION SYSTEM  
OF  
ANDHRA PRADESH IN INDIA  
  
AGREED UPON BETWEEN  
THE JICA STUDY TEAM  
AND  
THE TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

Hyderabad, 24 October 2003

工藤義行

**Yoshiyuki Kudo**

Team Leader

JICA Study Team



**K. Satyanarayana Murthy**

Chief Engineer (DFID & APL)

Transmission Corporation of

Andhra Pradesh Ltd.

(APTRANSCO)

## **I. General**

This memorandum covers the activities of JICA study team (the Team) in the period from 06 October 2003 through 24 October 2003 in the state of Andhra Pradesh.

The Interim Report on the study so far made was submitted in thirty (30) copies and explained by the Team to APTRANSCO/APCPDCL.

## **II. Operation and Maintenance**

1. The analysis of voltage at the consumer-end will be made on collection of the necessary data.
2. Items "3.4.3 Power Flow" and "3.4.5 Daily Load Curve" will be converted into item "3.4.3 Power Supply and Demand".

## **III. Distribution Line**

The Team have got the necessary measurement data during this survey period under the combined effort of counterparts. Accordingly, the Team will study the improvement plan in Japan and explain to APTRANSCO/APCPDCL at the next visit to India.

## **IV. GIS and GIS Database**

The Team provided GIS manual for distribution and instructed to counterparts in three substations how to make distribution GIS. The counterparts could understand basic methodologies and created distribution GIS of other feeders by themselves. Also the counterparts will make GIS map for all the feeders of target substation by January 2004.

The team left six GPSs and three digital cameras in three substations to continue their survey. Number of devices is as follows.

Name of substation	GPS	Digital Camera
Kothapet	1	1
Kattedan	1	1
Malkapur	4	1

The Team provided two new UPSs in Kattedan and Malkapur because the capacity of the existing UPS was insufficient.

## **V. Security**

The Team requested APTRANSCO and APCPDCL to provide one policeman to accompany the Team for security when they visit Medak District. APTRANSCO and



APCPDCL agreed this request and dispatched appropriate person.

**VI. Counterpart Training**

The advance copies of A2A3 form of the four (4) nominated persons have been received. These documents are to be sent through official channel to JICA India Office.

**VII. Workshop**

The 2nd workshop is planned to be held in the middle of January, 2003 as follows :

- First day : General explanation at the meeting hall.
- 2nd day and after : Group-wise meeting as required.

**VIII. Schedule**

The future schedule is attached herewith at Annex – 1.

Annex - 1 Schedule of the Study for Fiscal Year 2003

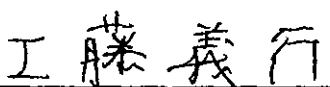
Name	Position	2003							2004						
		4	5	6	7	8	9	10	11	12	1	2	3		
Yoshiyuki KUDO	Team Leader/ Distribution Line		■	■					zzzzzz				■■■■		
Takeshi ICHIKAWA	Operation/ Maintenance		■	■					zzzzzz				■■■■		
Keiji HIGASHINAKA	Distribution Line				■				zzzzzz				■■■■		
Shinji OMOTEYAMA	GIS				■				zzzzzz				■■■■		
Shigenari MATSUMURA	SCADA System			■					zzzzzz				■■■■		
Ken-ichi KUWAHARA	GIS Database				■				zzzzzz				■■■■		
Tetsuya YAMANAKA	Maintenance Management/ Training			■					zzzzzz				■■■■		
Kanji SUZUKI	Coordinator			■					zzzz				■■■■		
Interim Report									△						
Draft Final Report													△		
Final Report															△
Workshop													△		

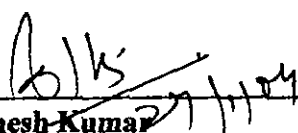
Note : ■ 3rd on-site survey ■■■■■■ 5th on-site survey  
 zzzzzzz 4th on-site survey △ Milestone


Minutes of Meeting  
for  
The Development Study on the Improvement of Power Distribution System  
of  
Andhra Pradesh in INDIA

Agreed Upon Between  
Japan International Cooperation Agency (JICA) Study Team  
and  
Transmission Corporation of Andhra Pradesh Limited  
and  
Central Power Distribution Company of Andhra Pradesh Limited

Hyderabad, 27 January 2004

  
Yoshiyuki Kudo  
Team Leader  
JICA Study Team

  
Dinesh Kumar  
Chairman & Managing Director  
Central Power Distribution  
Company of Andhra Pradesh Ltd.  
(APCPDCL)

  
J.V. Panduram 27/1/04  
Director (Projects Construction)  
Transmission Corporation of  
Andhra Pradesh Ltd.  
(APTRANSCO)

**Minutes of Meeting for  
Development Study on the Improvement of Power Distribution System  
of Andhra Pradesh in INDIA**

**I. General**

The minutes of the meeting signed between Mr. Yoshiyuki Kudo, Team Leader of JICA Study Team and Mr. Dinesh Kumar, CMD, APCPDCL on 27-01-2004 at 15 Hrs. in APCPDCL in the presence of Mr. Masami Kido, Energy and Mining Development Study Division, Mining and Industrial Development Study Department, JICA and Mr. J.V.Pandurangam, Director (Projects Construction), APTRANSCO.

This minutes of meeting covers the activities of JICA study team (hereinafter referred to as "the Team") in the period from 16 January 2004 through 27 January 2004 in the state of Andhra Pradesh.

The main objectives of this visit are (1) to present the Draft Final Report, (2) to hold the "Seminar on the Study," and (3) to collect and analyze data and information necessary for preparing the Final Report.

**II. The Draft Final Report**

The Draft Final Report on the study so far made was submitted in thirty (30) copies and explained by the Team to APTRANSCO/APCPDCL. The counterpart is requested to give their comments on the DF/R, all of which is very helpful for the Team to prepare the Final Report (F/R).

The Team requested APTRANSCO and APCPDCL to inform their comments on the report by 12 February 2004 by e-mail or through fax so that the team can complete the Final Report.

Suggestion;

JICA requests APTRANSCO/ APCPDCL to utilize GIS software effectively by updating the GIS data continuously. Further following is requested:

- (1) Continuous measurement of the meters and recording of readings
- (2) Works as per the O & M manual should be carried out regularly.

**III. Conduct of the Seminar**

A seminar was held on 21<sup>st</sup> January at Hotel Taj Krishna to present the study results and its recommendation and to make an exchange of opinions on the study results among the participants in the seminar and the Team. The participants in the seminar are listed in Annex-1.

**IV. Reflection of the Latest Data**

*AK*

*H. Kudo*  
27/1/04

*JK*

The Team will modify/revise the Draft Final Report based on the latest data which was provided to the Study team by APTRANSCO/APCPDCL during the Team's stay in Hyderabad from 16-1-2004 to 27-1-2004.

The Final Report will be submitted to Ministry of Power, Government of India through JICA India Office.

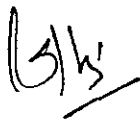
#### V. Transfer of the Equipment to APTRANSCO

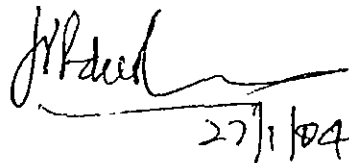
The team handed over equipments to Indian counterparts APTRANSCO/APCPDCL after completing their study. Number and item of equipments is as follows.

DELL Dimension 4550 Desktop	6 sets
HP DeskJet 1180c – A3 (Color)	3 sets
Canon Digital camera	3 sets
Germin GPS	6 sets
ESRI ArcView Version 8.2	6 sets
Microsoft Windows XP Professional	6 sets
Microsoft Office XP Professional	6 sets
Clip on meter	6 sets
ARUN-UPS	2 sets
Geological map for three substations	1 set

#### VI. Counterpart Training

Counterpart Training will be conducted for two weeks during March 2004 in Japan. The Team will accompany four trainees during the Counterpart Training.










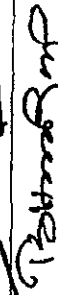
  
27/1/04



Annex – 1 List of participants



**The Development Study on the Improvement of Power Distribution System of Andhra Pradesh in INDIA**  
**Date: Wednesday, January 21, 2004**  
**List of participants(1/5)**

No.	Name	Affiliation	Signature
	<b>APTransco</b>		
1	Smt Rachel Chatterjee	Chairman & Managing Director	
2	Sri J.V.Pandurangam	Director (Projects Construction)	
3	Sri G. Keshava Rao	Director (Trans, O&M & Grid Operation)	
4	Sri G.Sai Prasad	JMD (HRD, Comm., IPC & Ref)	
5	Sri K. Satyanrayana Murty	CE Transmission(O&M)	
6	Sri G.Pathanjali Rao	CGM (HRD & Trg)	
7	Sri Kumarwamy Reddy	CE (Power Systems)	
8	Sri G.A. Manikya Prabh S. Suryanarayana S. Subramanyam	SE (Training) SE (System Operation)	
9	Sri Ashokachary	DE (Scada)	
10	Sri A. Ramakoteswar Rao	DE (OECF)	
11	Sri R. Ashokachary	ADE (APDRP)	
12	Sri N.V.V.S. Chandra Sekhar	AE	
13	Sri A. Seshaiiah	DE	
14	Sri V. Vijay Chandra Rao	DE (CCI)	
15	Sri C. Kamalakara Rao	DE (APL)	
16	Sri S. Subramanyam	ADE	
17	Sri T. Haranadha Rao		

6/19

Jee

The Development Study on the Improvement of Power Distribution System of Andhra Pradesh in INDIA  
 Date: Wednesday, January 21, 2004  
 List of participants (2/5)

No.	Name	Affiliation	Signature
	<b>APTransco</b>	-	-
18	Smt. K. Vidyardhari	ADE	K. Vidyan / [Signature]
19	Sri O. Hariprasad	ADE	[Signature]
20	Sri P.V. Madhusudhan	ADE	
21	Sri C.L.N. Prasad	AE	
22	Sri K. Ram Mohan	AE	
23	Sri T. Vishnu Vardhan Reddy	ADE	
24	CIRE		
25	G. SHANKER	Faculty	[Signature]
26	Dr. M.Y. Reddy	A.D.	[Signature]
27	S. Suresh	C. V.	[Signature]
28			
29			
30			
31			
32			
33			
34			

10

8

6/12

[Handwritten mark]











The Development Study on the Improvement of Power Distribution System of Andhra Pradesh in INDIA  
 Date: Wednesday, January 21, 2004  
 List of participants (3 / 5)

No.	Name	Affiliation	Signature
	<b>APCPDCL</b>		
1	Sri Dinesh Kumar	Chairman & Managing Director	
2	Sri D. Vidyasagar	ADE/T to CMD	
3	Sri G. Vinay Kumar	Director (Operation)	
4	Sri G. Pedda Bapulu	CGM (Operation)	
5	Sri G. Purandar Rao	Corporate office, SE (O & M)	
6	Sri L. Radha Krishna	DE / EA	
7	Sri B. Krishna Murthy	SE (Operation) / RR District (South)	
8	Sri K. Rajeshwar	DE	
9	Sri Y. Markandaiah	DE (Operation) / Rajendranagar	
10	Sri D.L. Prabhakar	ADE / Gaganpahad	
11	Sri K. Rajendar	AE / Op. / Kattedan	
12	Sri K. Raghuma Reddy	DE/Op. / Saroornagar	
13	Sri Chittaranjan	ADE/Op. / Saroornagar	
14	Sri Srikanth	AAE/Op. / Saroornagar	
15	Sri S. Sitaram Babu	AGM / IT	
16	Sri D.S. Sarma	SE (Operation) / RR District (North)	
17	Sri M. Sudhakar Reddy	DE/T	

6/1/04

The Development Study on the Improvement of Power Distribution System of Andhra Pradesh in INDIA  
 Date: Wednesday, January 21, 2004  
 List of participants (4/5)

No.	Name	Affiliation	Signature
	APCPDCL		
18	Sri M. Ram Mohan	SE/ Assessments	
19	Sri P. Jagathpal Reddy	SE/Op./ Medak	
20	Sri K. Venkat Reddy	DE/T	
21	Sri Amarnath	AE/Tech/Sangareddy	
22	Sri Ch. Ashok Reddy	DE/Op./ Sangareddy	
23	Sri Bagesiah	AE/Comm./Sangareddy	
24	Sri Syed Masood	AAE	
25	Sri M. Venkata Bangaraiah	SE/ SCADA	
26	Sri Subba Rao	DE/ SCADA	
27	Sri Srinivasa Chary	ADE/ SCADA	
28	R. Krishna Murthy	ADE/OP/CSPT.	
29	N.S.R. Murthy	ADE/Masterplan	
30	K. Narasimha Rao	ADE/Masterplan	
31	G. Jagannatha	SS/Masterplan	
32	P. Raghavendra Rao	ADE/IB #111	
33			
34			

24

16/1/04

gr





