Tuesday July 15, 1:30 p.m.

- Service Quality Monitoring in Nicaragua
  - Mr. Mario Fava, Service Quality Director, INE.

- Introduction

Service Quality is based on Law 272, its regulations, and Electrical Service Rulemaking

Aspects Monitored by Electrical Service Quality

- Supply Quality
  - Supply continuity
  - Voltage quality
- Commercial Service
  - Customer Service
    - New Service Contracting
    - Billing Problems
    - Reading Estimates
    - Complaint Resolution

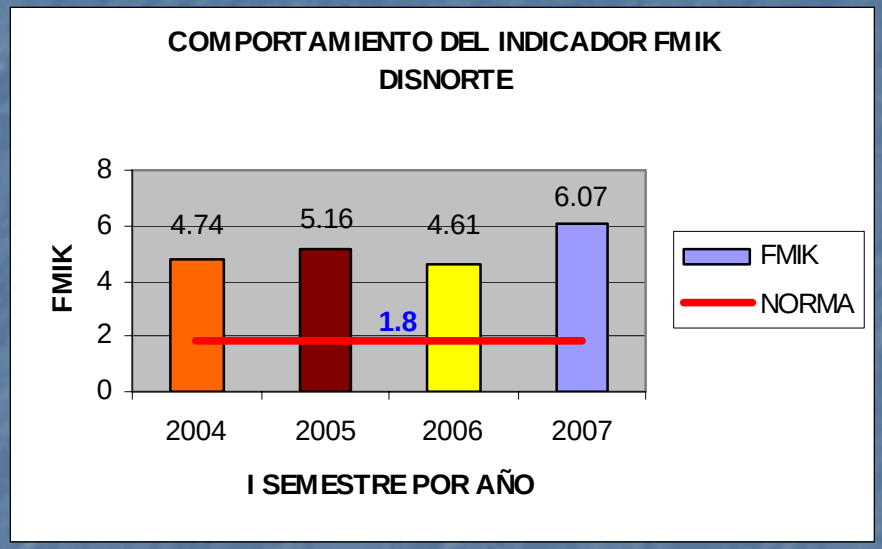
Global indexes monitored for continuity

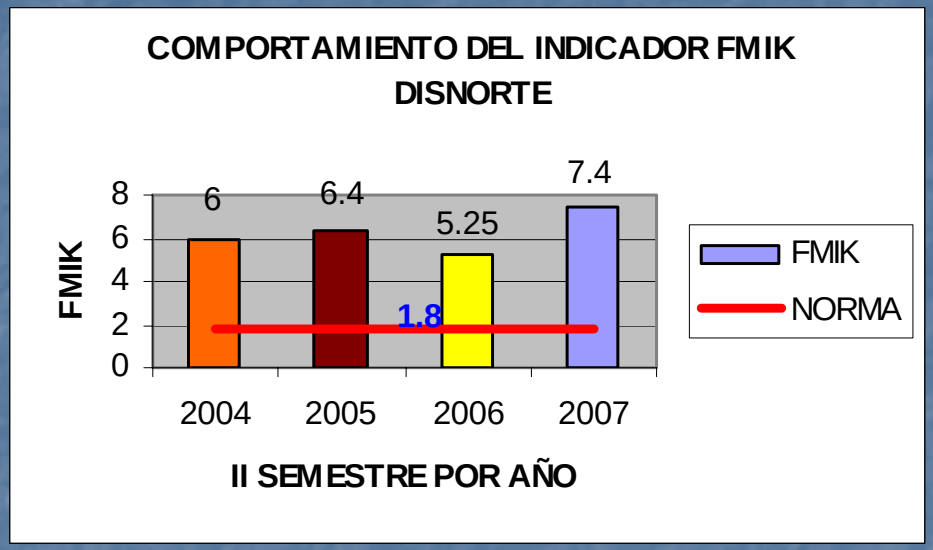
- Number of Interruptions
- Interruption Duration
- Based on the above, single continuity indexes can be computed, the most usual being:
  - Number of interruptions (outages / period)
  - Average interruption duration (hours / outage)
  - Total outage duration (hours / periods)
  - Non supplied energy (KWh / period)

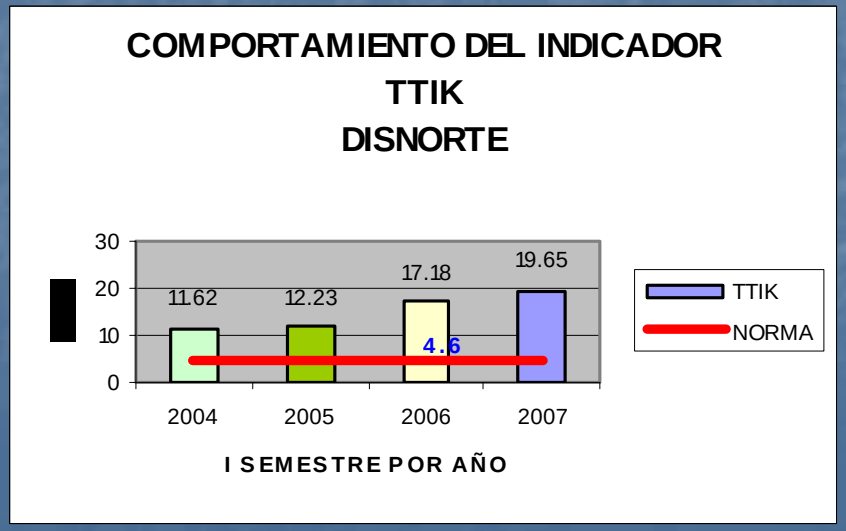
Technical indicator monitoring evolution

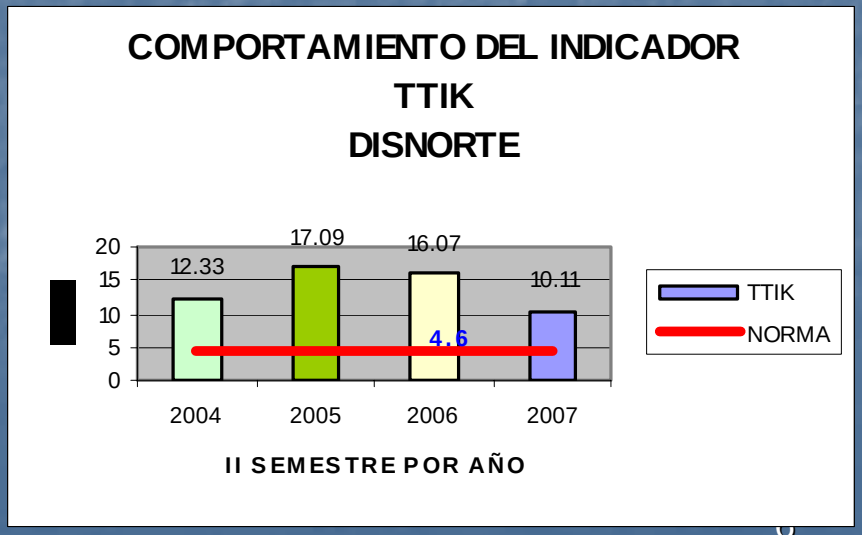
DISNORTE						
YEAR	FMIK I SEMESTER	FMIK II SEMESTER	FMIk Regulated	TTIK I SEMESTER	TTIK II SEMESTER	TTIk Regulated
2004	4.74	6	1.8	11.62	12.33	4.6
2005	5.16	6.4	1.8	12.23	17.09	4.6
2006	4.61	5.25	1.8	17.18	16.07	4.6
2007	6.07	7.4	1.8	19.65	10.11	4.6

Technical indicator monitoring evolution





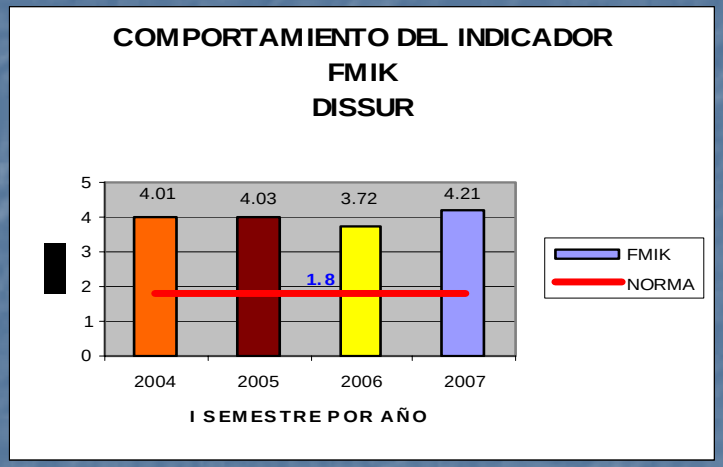


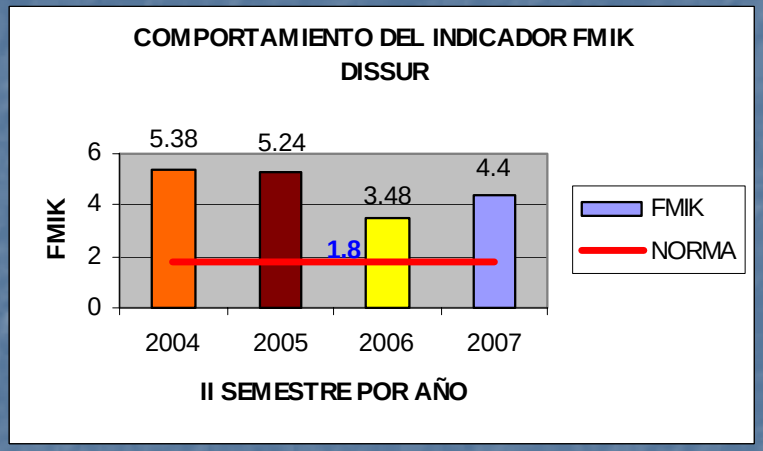


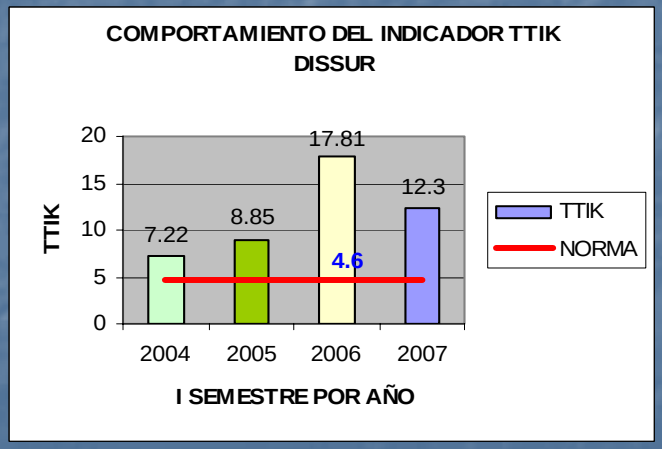
Technical indicator monitoring evolution

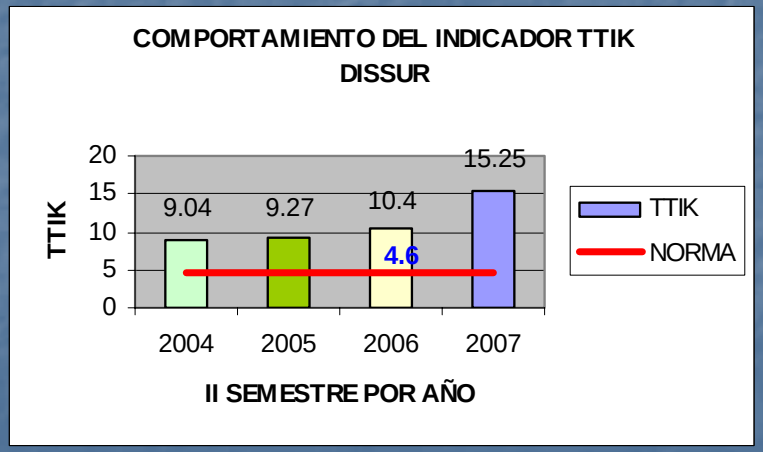
DISSUR						
YEAR	FMIK I SEMESTER	FMIK II SEMESTER	FMIk Regulated	TTIK I SEMESTER	TTIK II SEMESTER	TTiK Regulated
2004	4.01	5.38	1.8	7.22	9.04	4.6
2005	4.03	5.24	1.8	8.85	9.27	4.6
2006	3.72	3.48	1.8	17.81	10.4	4.6
2007	4.21	4.4	1.8	12.3	15.25	4.6

Monitoring Technical Indicator Evolution









Technical indicator review proposal

STAGE	FMIk		TTIk	
	URBAN	RURAL	URBAN	RURAL
1.3	3.4 (times)	8.0 (times)	6.4 (hours)	14.0 (hours)

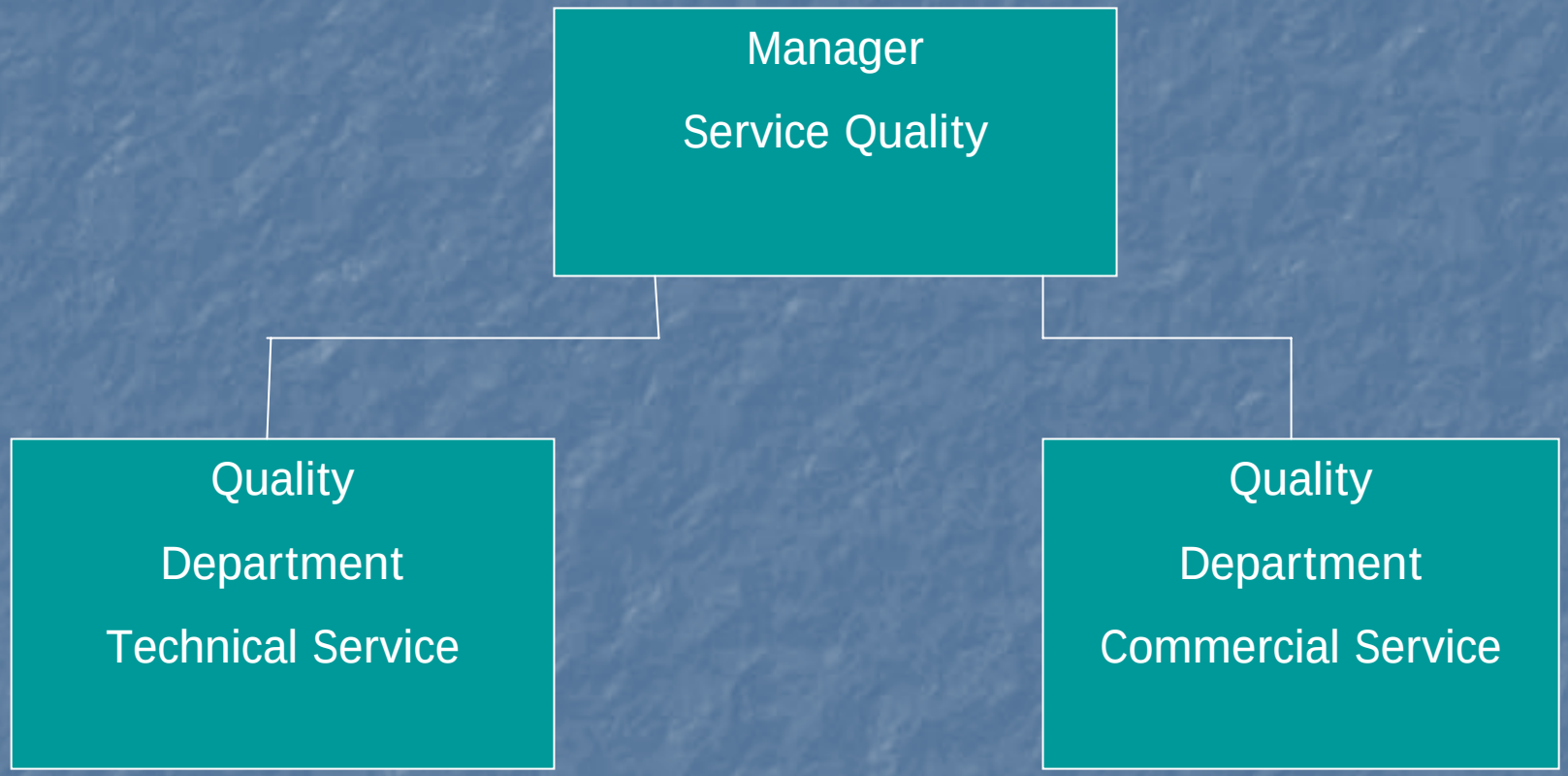
Note: Year 2002.

New limit values should be set for these technical indicators.

Service Continuity

- It will be evaluated according to the following indicators:
  - Interruption frequency, the number of times energy supply to a Customer is interrupted in a particular period of time
  - Total interruption duration, total time the Customer has been without electric energy
- Voltage quality issues to be controlled:
  - Slow variations in voltage level and
  - Voltage wave disturbances at Customer supply point

Service Quality Management



Service Quality Management

- <u>Commercial Service Quality Department:</u>
  - Oversees Distributing Company obligations concerning commercial service provision related to timing and quality in responding to: Emergencies (125), connection requests (new services), billing complaints, delays in restoring energy supply (electrical service suspension due to delinquency), etc.

Service Quality Management

- <u>Technical Service Quality Department:</u>
  - Monitors the set of physical and technical parameters determining electrical supply quality, such as service continuity, voltage and frequency regulation, and disturbances according to parameters established by NCS.
  - There is a link between both departments, since every technical problem becomes a commercial problem.

Service Quality Management

- <u>Technical Service Quality Department – Electric Distribution Network Monitoring:</u>

Monitoring and Control of poor electrical service quality and Construction Standards violations.

Service Quality Management

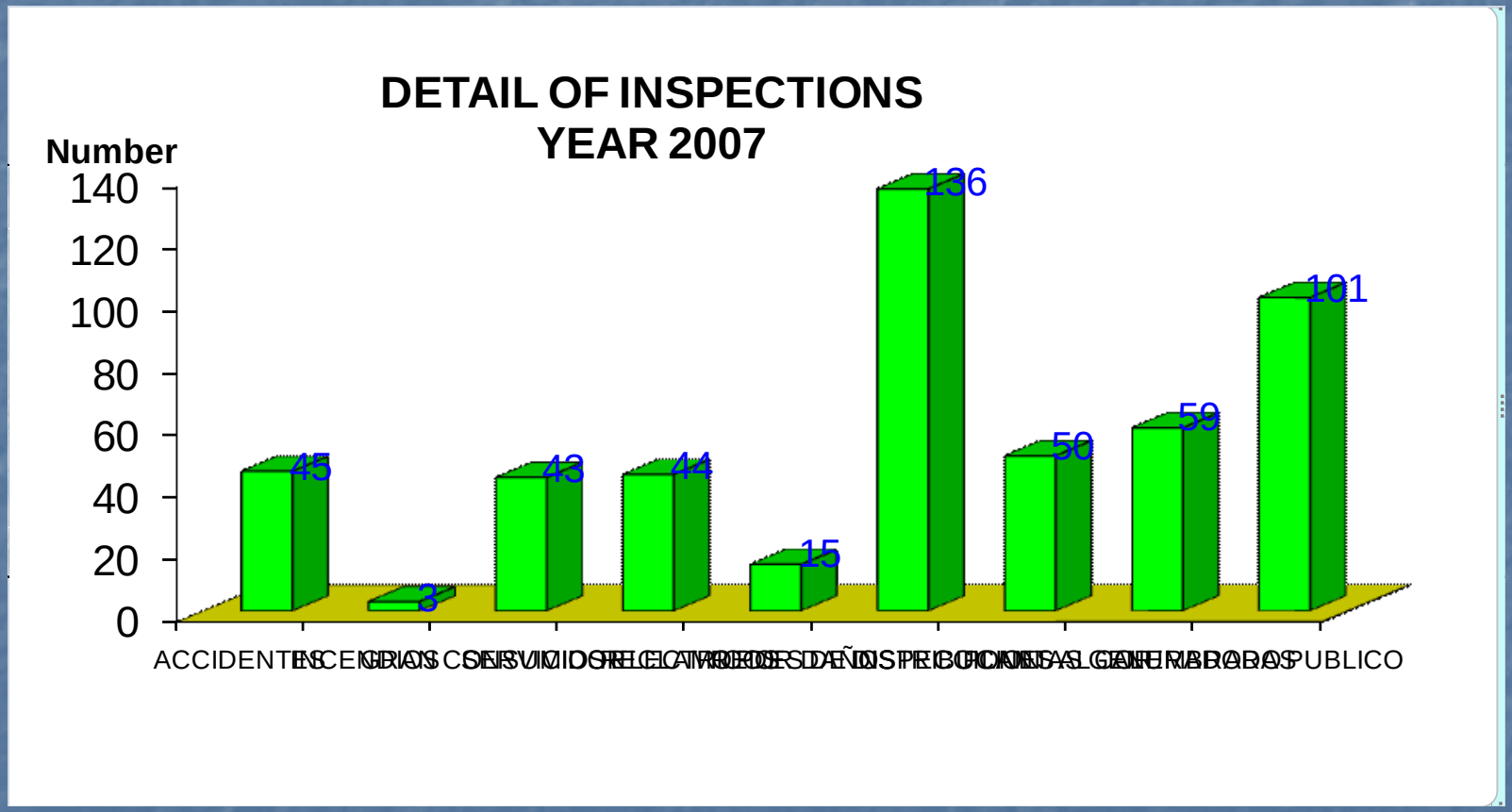
- Technical Service Quality Department – Electric Distribution Network Monitoring :

Monitoring and Control of poor electrical service quality and Construction Standards violations.

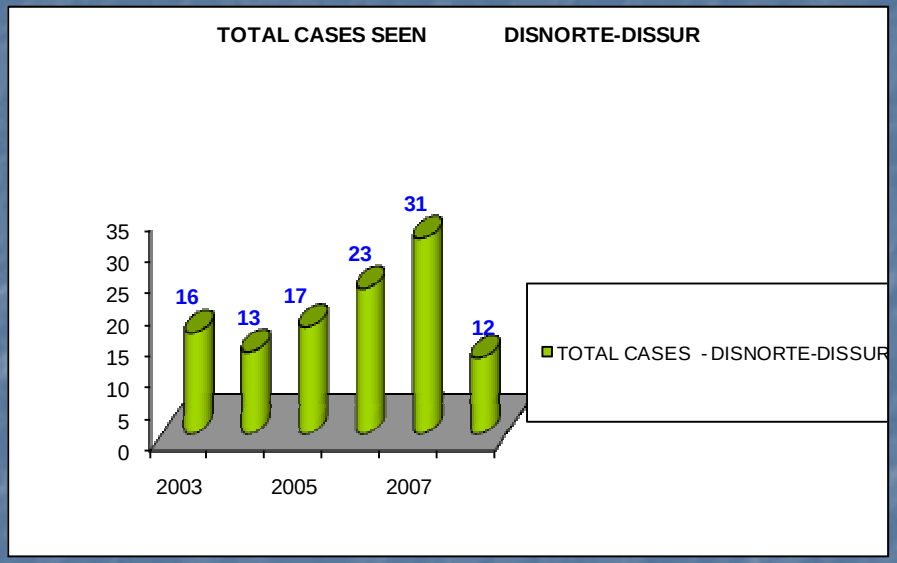
- The Commercial Service Quality Department monitors:
  - Quarterly reports and databases submitted by Distributing Companies.
  - Commercial offices, in order to insure compliance with customer service. Conditions of customer service premises
  - Customer service timing
  - Efficiency in responding to requests and complaints made by customers, issuing clear and correct billings based on actual readings.

- The Technical Service Quality Department
  - Carries out field monitorings:
    - Distribution grids, public lighting, electrocution accidents, fires, claims for damaged equipment and property, easements, voltage level variations (fluctuations and/or low voltage), outfitting large consumers, generator inspections, stranded plants, firefighter and police inquiries (concerning accidents and fires).
    - Control of semiannual FMIK and TTIK indicators.

Detail of Inspections

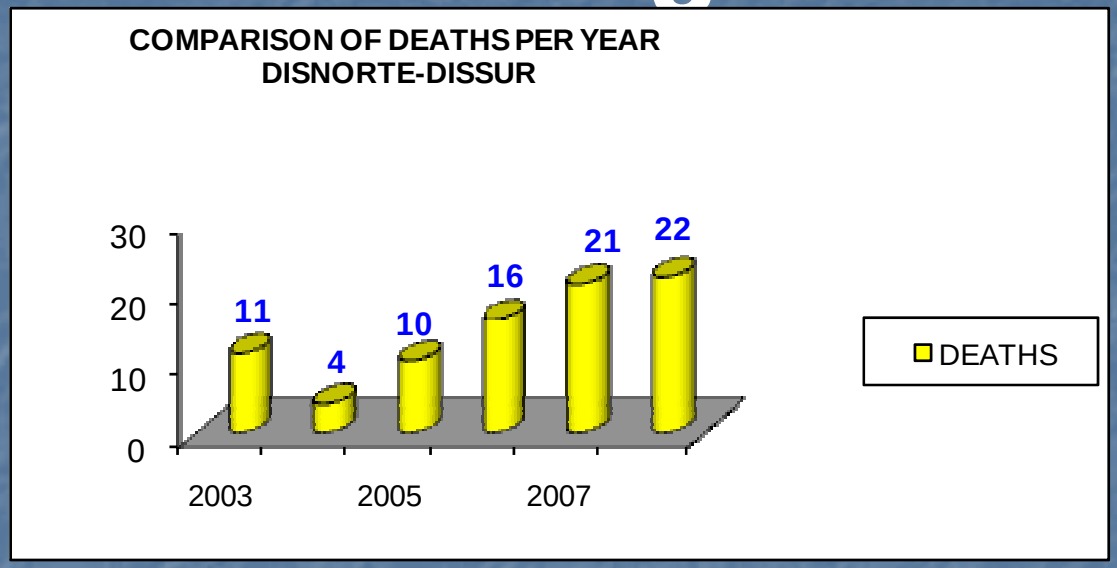


Cases seen



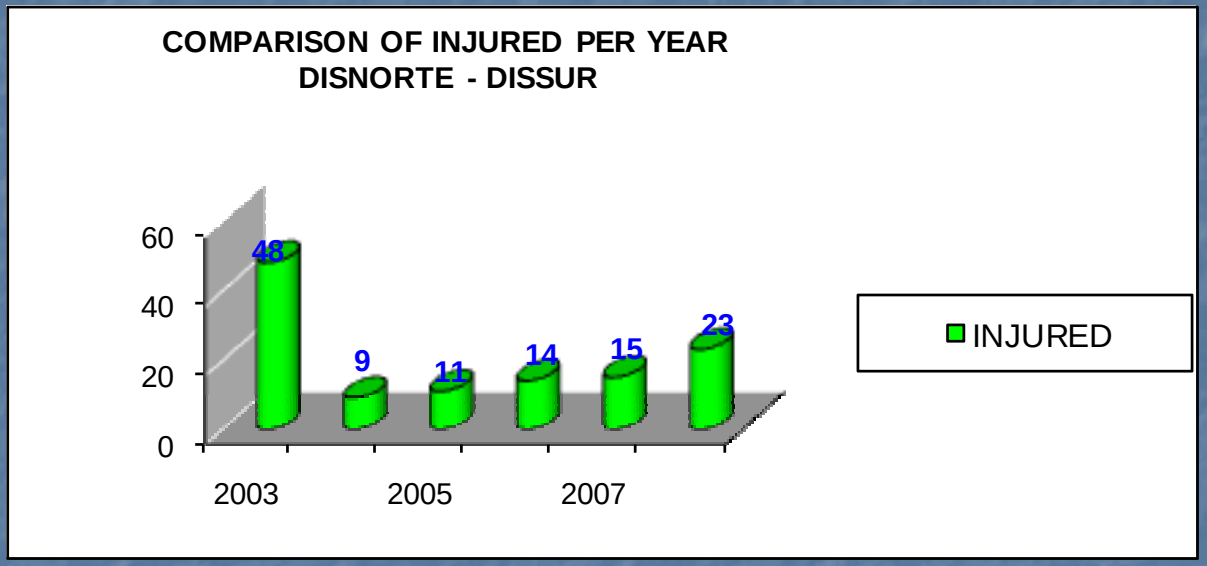
YEAR	TOTAL ACCIDENTS DISNORTE - DISSUR						
	CASES	DEATHS	INJURED	TOTAL AFFECTED	RESPONSIBLE		
					YES	NO	N/A
2003	16	11	48	59	1	0	15
2004	13	4	9	13	0	0	13
2005	17	10	11	21	6	0	11
2006	23	16	14	30	14	8	1
2007	31	21	15	36	7	22	2
2008	12	22	23	45	2	0	10
TOTAL	112	84	120	204	30	30	52

Service Quality Monitoring Results



YEAR	TOTAL ACCIDENTS DISNORTE - DISSUR						
	CASES	DEATHS	INJURED	TOTAL AFFECTED	RESPONSIBLE		
					YES	NO	N/A
2003	16	11	48	59	1	0	15
2004	13	4	9	13	0	0	13
2005	17	10	11	21	6	0	11
2006	23	16	14	30	14	8	1
2007	31	21	15	36	7	22	2
2008	12	22	23	45	2	0	10
TOTAL	112	84	120	204	30	30	52

Indicator associated to Technical Quality



YEAR	TOTAL ACCIDENTS DISNORTE - DISSUR						
	CASES	DEATHS	INJURED	TOTAL AFFECTED	RESPONSIBLE		
					YES	NO	N/A
2003	16	11	48	59	1	0	15
2004	13	4	9	13	0	0	13
2005	17	10	11	21	6	0	11
2006	23	16	14	30	14	8	1
2007	31	21	15	36	7	22	2
2008	12	22	23	45	2	0	10
TOTAL	112	84	120	204	30	30	52

Access to Online Information

- Monitoring of incidents through REPORTS GENERATED from the 125 database on line with Service Quality
- Comparison of data developed online by the distributor to verify incident occurrence or omission

Access to Online Information