



الشركة السعودية للكهرباء
Saudi Electricity Company



2007 PQWG Annual Report

May - 2008

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1. INTRODUCTION

The Power Quality Working Group (**PQWG**) was formed according to the recommendations of 2004 PQ Workshop held in Riyadh March, 2004. The PQWG is a permanent committee with membership comprising of major industries, institutional firms and Saudi Electricity Company (SEC), chaired by the representative of the hosting organization.

One of the important recommendations of the 2004 PQ Workshop is to start establishing an annual report dealing with the existing PQ levels across SEC transmission network and its relative impacts upon SEC bulk industrial customers. The target of the desired annual report is to:

- Exchange information of PQ related topics between all PQWG members.
- Extract lessons learned from discussing disturbances and fault incidents reported by SEC transmission systems and reported by bulk customers.
- Develop PQ database identifying records of disturbances and their effects upon the operation of their major industrial customers specifically Saudi Aramco and SABIC companies.
- Recommend for follow up actions so that secure supply system and high quality of power supply can be verified.

The purpose of implementing the work is to coordinate between all PQWG members, information and experiences, and to ensure secure supply electricity delivered by SEC transmission networks to its major industrial customers so that adequate quality of power supply that meets customer's requirements and needs can be obtained.

Yearly, PQWG members with the concern of the PQ issues do a comprehensive report discussing their efforts and their future plans. During the year of 2007, PQWG members have scheduled four meetings. The assigned meetings were useful where PQ related topics have been discussed, recent customer or university PQ studies and projects have been demonstrated, and follow up actions and recommendations have been reviewed.

2. MISSIONS AND OBJECTIVES

PQWG will exchange information and technical data and unify procedures related to PQ issues in the Kingdom through the year of 2007. The group will form a good interconnection tool between SEC, its major bulk customers (Saudi Aramco and SABIC), and Kingdom research institutes. Supplying system disturbances that cause bulk customer's miss-operations or stop of production will be recorded, manipulated and analyzed. Identifying and following causes of disturbances and providing recommendations to enhance the performance of the supplying systems will also be carried out.

The main objectives of the desired PQWG- annual report are:

- **Reporting Disturbances:**

The performance of the supplying system will be identified throughout reporting disturbances that affect the operation of SEC bulk customers. Any event in the power systems, that results in deviation of the supplying system voltage from the normal ($\pm 5\%$) and emergency ($\pm 10\%$) conditions are planned to be collected.

- **Identifying PQ Problems:**

Analysis tools will be executed to identify disturbances, its origin and causes. This will be useful in providing suitable remedy action to reduce the possibility of disturbance occurrence.

- **Recommend Follow up actions:**

Following the analysis procedures, certain recommendations might be stated for specific remedy actions to be followed.

- **Enhance coordination between all parties:**

Coordination between all parties is one of the PQWG objectives. Coordination between SEC supplying system capabilities and bulk customer's needs, exchange information and experiences, and scheduled meetings between all parties will be useful to verify the maximum secure operating conditions and decrease the possibility of disturbance re-occurrence.

- **Develop PQ database:**

Finally, SEC will develop the PQ database (Previous 5 years of data) required to evaluate the PQWG annual disturbance report during the year of 2007.

3. PQWG MEMBERS

Members who are willing and able to commit or engage their organization or institution in PQWG activities consists of:

- Saudi Electricity Company (SEC).
- The Royal Commission for Jubail and Yanbu (RCJY).
- King Abdulaziz City for Science and Technology (KACST).
- King Abdulaziz University (KAU).
- King Fahd University of Petroleum & Minerals (KFUPM).
- Saudi Aramco.
- SABIC.
- Power & Water Utility Company for Jubail & Yanbu (MARAFIQ).

Detail contact information, name, affiliation, contact phone and e-mail of all the PQWG members are listed in appendix (A)

4. 2007 PQWG ACHIEVEMENTS

PQWG has been verifying certain achievements throughout definite schedule meeting during the year of 2007. Dates, hosts, locations, and PQWG discussion points of the assigned meetings are explained in the following sub-sections.

2007 MEETING SCHEDULE

Meeting #	Meeting Date	Host	Location
1	Feb 28, 2007	Saudi Aramco	Dhahran
2	May 2, 2007	KACST	Riyadh
3	Sep 5, 2007	SABIC	Eastern province
4	Dec 5, 2007	Saudi Aramco	Eastern province

4.1 PQWG Achievements – 1st Meeting

Date : Wednesday, 28-02-2007

Time : 10:00 AM- 01:00 PM

Venue : Dhahran

- **Meeting Discussion Points**

The meeting was on Wednesday 28th of February 2007 and hosted by Saudi Aramco in Dhahran. The meeting started at 10:00, Mr. Hamad Al-Khaldi, the meeting chairman, started the meeting welcoming the attendees. Then he introduced Mr. Abduladel S. Al-Marar as a representative of SEC-Distribution in the group. The group reviewed the meeting agenda and the following were discussed:

I. Review Last Minutes of Meeting

- o Mr. Laith A. Al-Bassam, SEC, confirmed that he invited SEC Generation Sector to join the group; they are expected to attend the next meeting.
- o Mr. Hamed Al-saggaf, SEC, confirmed that (ECRA) decline a request to join the group. The group asked Mr. Al-saggaf to invite them again.

II. Discuss the Agenda of the Next PQ Workshop

- o The group agreed to have April 4 as a tentative day for the next workshop.
- o Mr. Laith A. Al-Bassam pointed out that the next PQ Workshop agenda and location must be approved by the new Transmission EVP.

- o The group agreed on sending the next workshop presentation (at least the draft) to group secretary before 14/03/2007.
- o The workshop outlines as follows
 1. One common presentation by PQWG members.
 2. One presentation by SEC.
 3. One presentation by Saudi Aramco.
 4. One presentation by SABIC.
 5. One presentation by KFUPM.
 6. One presentation by ECRA

III. Discuss Any Other Issues

- o Dr. Mohamed Smiai, KACST, raised the issue of power quality studies needed by the represented companies, which could be carried out by the universities and institutes represented in the working group.
- o The group agreed to have further discussion on this issue in the next meetings.
- o Dr. Mahmoud Kassas suggested posting the activity of PQWG on SEC official site. Mr. Khaled Al-Gahmdi will check the posting possibility with SEC - IT department.
- o It was agreed to invite a representative of system operation & control department, SEC, for a presentation on SEC preparation for next summer.
- o Group secretary will Contact MARAFIQ representative regarding their group meetings attendance.
- o Mr. Khaled Al-Gahmdi will send e-mail for 2006, PQWG recommendations.
- o It was agreed to add absent names to the attendance sheet in the Minutes of Meeting.
- o The group agreed on changing the reference of group meetings to be in yearly bases instead of PQ workshop date. Therefore, 2006 PQWG annual report will include three meetings only.
- o The group agreed on the meetings calendar 2007/2008 as follows:

Target Date	Time	Location	Host
Wednesday 2nd May 2007	10:00	Riyadh	KACST
Wednesday 5th September 2007	10:00	Eastern Province	SABIC
Wednesday 5th December 2007	10:00	Eastern Province	Saudi Aramco
Wednesday 7th February 2008	10:00	Jeddah	KAAU

4.2 PQWG Achievements – 2nd Meeting

Date : Wednesday, 02-05-2007
Time : 10:00 AM- 01:00 PM
Venue : Riyadh.

- **Meeting Discussion Points**

The meeting started at 10:00, Dr. Mohamed Smiai, the meeting chairman, started the meeting welcoming the attendees. Then he introduced Mr. Fayez Al-Jaber as a representative of ECRA and Mr. Abdullah Alshehri as a representative of Systems Operation-SEC. The group reviewed the meeting agenda and the following were discussed:

I. Review Last Minutes of Meeting

The group discusses and reviews certain actions that were recommended in the last minutes of meeting as follows:

<u>Recommendation</u>	<u>Action Taken</u>
▪ Inviting (ECRA).	: Done.
▪ Contacting MARAFIQ regarding their attendance	: MARAFIQ was contacted by Dr. Yusuf Al-Turki and Group secretary in this regard
▪ Sending the next workshop presentations to the Group secretary (at least the draft).	: Postpone the Sending of presentations due to the change of workshop date
▪ Check the possibility of posting all the activity of PQWG on SEC official site	: Mr. Laith A. Al-Bassam confirmed that Mr. Khaled Al-Gahmdi is working with SEC-IT on this issue
▪ Follow 2006, PQWG recommendations	: Done.
▪ Inviting a representative of system operation & control department, SEC, for a presentation on SEC preparation for next summer.	: Done.

II. Discuss the Presentation on SEC preparation for next summer

- o Mr. Mr. Abdullah Alshehri, the representative of Systems Operation-SEC, presented SEC preparation for next summer followed by group discussion.

III. Follow up the Next PQ Workshop

- o Mr. Laith A. Al-Bassam will inform the group members about the new date and location of the next PQ Workshop when they are confirmed by SEC.

V. Review the Next PQWG Meeting Location & Agenda

- o The group confirms that the next meeting will be as scheduled.

IV. Discuss Any Other Issues

- o The group members asked for another presentations by CTA system operation & control department, SEC, to highlight SEC efforts during summer at the next meeting, and by DTA at the third meeting.

4.3 PQWG Achievements – 3rd Meeting

Date : Wednesday, 05-09-2007

Time : 10:00 AM- 01:00 PM

Venue : Eastern Province.

- **Meeting Discussion Points**

The meeting started at 10:00, Mr. Hussain AL-Abbad - SABIC, the meeting chairman, started the meeting welcoming the attendees. The following points were discussed within the minutes of the meeting:

I. Review Last Minutes of Meeting

- o **Discusses the Next PQ Work Shop.**
 - Mr. Laith A. Al-Bassam confirmed that the workshop will be at Riyadh, and since this point is a part of this meeting agenda, it will be discussed latter on this meeting.
- o **Posting the activity of PQWG on SEC official site.**
 - Mr. Khaled Al-Gahmdi presented a sample of the PQWG page which will be posted on SEC official site. The group will discuss the type of information and access of this page during the next meeting.

II. Discuss the Presentation on SEC preparation during summer

- o Mr. Abdullah Alshehri, the representative of Systems Operation-SEC, resented SEC Presentation on SEC efforts during summer.

III. Discuss the presentation on SABIC effort to reduce power consumption during 2007 summer

- o Mr. Hussain AL-Abbad, the representative of SABIC, presented SABIC effort to reduce power consumption during 2007 summer.

IV. Discuss the Presentation on Saudi Aramco effort to reduce power consumption during 2007 summer

- o Mr. Turki Al-Shehri, the representative of Saudi Aramco, presented Saudi Aramco effort to reduce power consumption during 2007 summer.

V. Discuss the location and the Date of the Next PQ Workshop

- o The location of the next PQ Workshop will be at Riyadh.
- o The group suggested Wednesday December 05, 2007 as a date of the next workshop.
- o Mr. Laith A. Al-Bassam will confirm the date of the next PQ Workshop with SEC management and inform the group members within one month.
- o The workshop outline will be as agreed previously :
 - One common presentation by PQWG members
 - One presentation by SEC
 - One presentation by Saudi Aramco
 - One presentation by SABIC
 - One presentation by KFUPM
 - One presentation by ECRA

VI. Discuss Next PQWG Meeting Location & Agenda

- o the group agrees that if the new workshop date is confirmed, the next group meeting will be on Wednesday November 21, 2007. The meeting will be hosted by Saudi Aramco at Eastern Province.

VII. Other Issues

- o The group members asked Dr. Mohamed Smiai to present, on the next meeting, his view on power quality studies needed by the represented companies, which could be carried out by the universities and institutes represented in the working group.

PQWG Achievements – 4th Meeting

Date : Wednesday, 05-12-2007
Time : 10:00 AM- 01:00 PM
Venue : Eastern Province.

- **Meeting Discussion Points**

The meeting started at 10:00, Mr. Sami Al-Huwais - Saudi Aramco, the meeting chairman, started the meeting welcoming the attendees. The group reviewed the meeting agenda and the following were discussed:

I. Review Last Minutes of Meeting

- **Discusses the Next PQ Work Shop.**
 - Mr. Al-Bassam confirmed that he still waiting for approval from SEC management regarding the new date for the next PQ Workshop, he expected the end of March 2008 as the new date.
- **Posting the activity of PQWG on SEC official site.**
 - Mr. Al-Gahmdi confirmed that the PQWG page, which will be posted on SEC official site, is currently under construction, updated sample of the web-page presentation will be sent to the group members for review.

II. Discuss SEC-CTA Efforts During Summer – Update

- The peaks at the last Presentation on SEC-CTA efforts during summer were updated and presented to the group by Mr. Al-Gahmdi.

III. Discuss the Presentation on SEC Efforts during Summer

- Mr. Felemban, the representative of Systems Operation-SEC-DTA, presented SEC-DTA efforts during summer followed by group discussion.

IV. Discuss the Participation of the PQWG in CIGRE events and establishing study or working group under CIGRE.

- The group members agreed to explore the requirements and expectations of CIGRE for further discussion.
- Mr. Al-Huwais will contact GCC-CIGRE in this regard.

V. Discuss the Power quality studies, which could be carried out by the universities and institutes represented in the working group

- Dr. Smiai presented several ideas regarding PQ studies, which could be carried out by the universities and institutes in the working group.
- Mr. Laith A. Al-Bassam confirmed that he will discuss this issue with SEC's studies committee.

- Dr. Yusuf Al-Turki and Dr. Mahmoud Kassas will work on developing this issue further and present their view at the next meeting.

VI. Discuss the Next PQ Workshop

- This item was discussed as an action item.

VII. Discuss the Next PQWG Meeting Location & Agenda

- The meeting will be on February 6th, 2008 and hosted by KAAU at Jeddah.

5. FOLLOW UP THE 2006 PQWG RECOMMENDATIONS

One of the main PQWG objectives is to follow recommendations that already assigned in the previous PQWG by the committee members (PQWG 2006 Recommendations). Following are the 2006 PQWG recommendations and the implementation status:

No.	Recommendation Statement	Action Taken
1	Explore power quality experience and related practices for countries with similar environment.	In Progress
2	Enhance power quality awareness of concern staff through training and seminars.	In Progress
3	Follow up the recent projects and studies relative to the development of national power quality standards.	Implemented
4	Diagnose problems in transmission systems to evaluate the related PQ problems of customers, if any.	Implemented
5	Conduct comprehensive studies showing the possibility of implementing certain power quality mitigation techniques to improve service of quality supply delivered to the customers.	Implemented
6	Exchange and discuss findings of some of the international Power Quality Groups / Committees and explore those that can have great effect in improving the issue of PQ in Saudi Arabia.	Implemented
7	Due to shortage of generation capacity, SEC recommends to maintain the reserve margin for the short-term (operation) and long-term (planning).	Implemented
8	SEC needs to encourage for implementing Co-Generation systems with bulk customers (i.e. Saudi Aramco, SABIC...etc...).	Implemented
9	SEC is encouraged to plan direct communication and meetings with its bulk customers to discuss summer operational strategy and load management plans.	Implemented
10	Establish a PQWG Web-Page	Implemented
11	Re-inviting ECRA to attend PQWG meeting.	Implemented
12	PQWG is encouraged to produce Request for Proposals which aims to enhance supply power quality for bulk customers.	In Progress
13	PQWG is to work on inviting Concerned Bulk Customers, ECRA, and utilities to fund these proposals.	Implemented

6. 2007 BULK CUSTOMERS DISTURBANCES

6.1 Disturbance Records – Trend Data

During the year of 2007, PQWG reported (118) fault incidents that having major effects upon the operation of Saudi Aramco & SABIC industrial bulk customers. The major effects were recorded in Saudi Aramco where 80% of the total disturbances introduce significant effects on Saudi Aramco operating systems.

Figure (6.1) shows numbers of disturbance records reported by each of the two industrial customers (Saudi Aramco and SABIC) while, for comparison, Figure (6.2) shows number of disturbances that have been recorded for the previous five years.

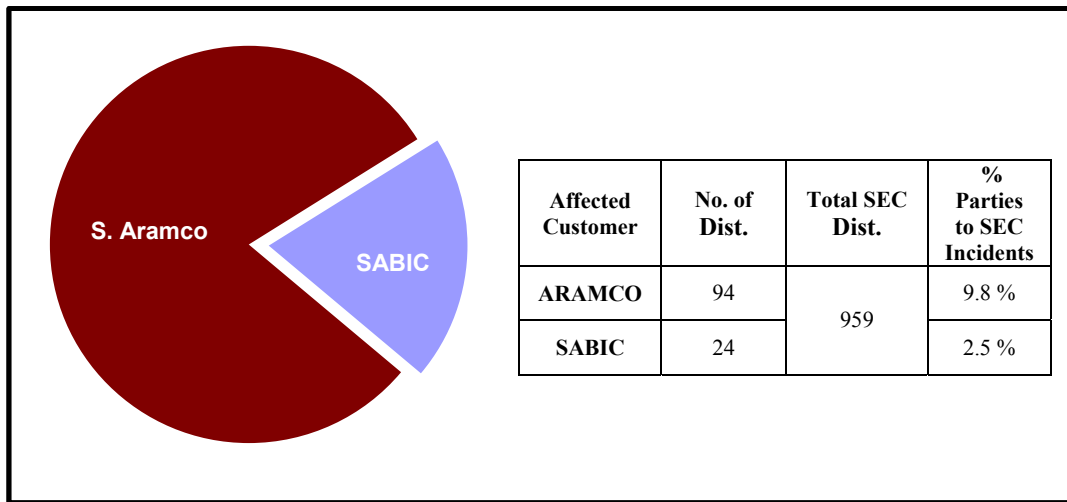


Figure 6.1: 2007 Total Number of Disturbances Affected Saudi Aramco & SABIC

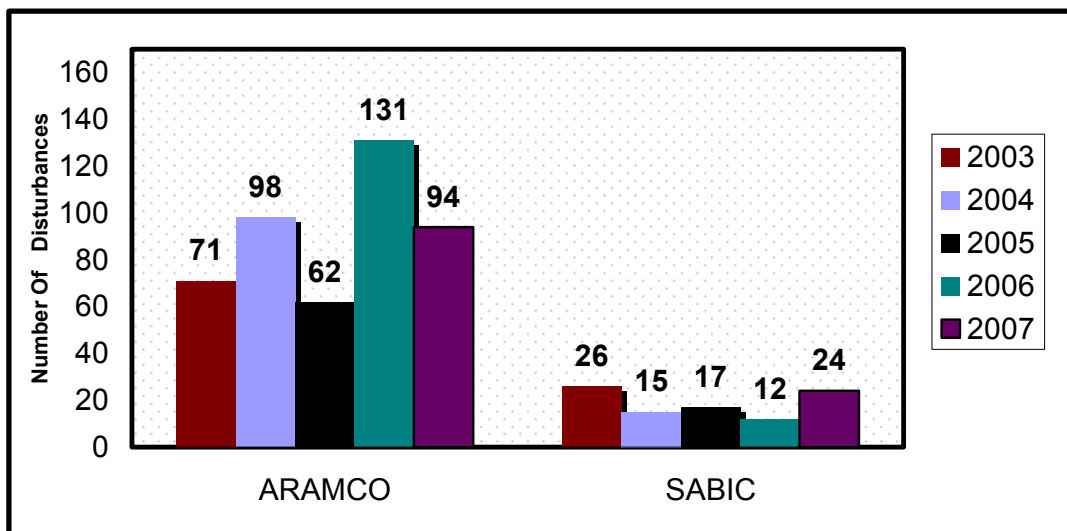


Figure 6.2: Number of Disturbances Affected Saudi Aramco & SABIC

6.2 Disturbance Records – Causes

The potential of disturbances could be resulted from number of basic causes that may include Weather Related Conditions, Equipment Failure (system component damages), Human Errors, Protection Mal-Operation, System Deficiency (weakness of the supplying system), and Miscellaneous. Figures 6.3 and 6.4 show the distribution of disturbances causes and their percentage parties that effected each of the industrial companies (Saudi Aramco and SABIC).

Results obtained from cause of disturbances representing figures indicate that, among the different cause of interruption classes, the Weather Related class is the major cause in the Saudi Aramco while it has no significant effects upon system operation of SABIC. The obtained results showed that 57% of the total Saudi Aramco disturbances are due to whether related conditions.

On the other hand, the Equipment Failure class is the major cause in SABIC while it has the second effects upon system operation of Saudi Aramco. The obtained results showed that 54% and 26% of the total SABIC and Saudi Aramco respectively disturbances are due to equipment failure.

In addition to that, human error, as not effective cause of disturbance, shows a low effects upon Saudi Aramco and SABIC operating system where it records 4% and 8 % respectively of the total Saudi Aramco and SABIC disturbances.

Also, miscellaneous as a third cause of disturbance upon Saudi Aramco where it records 7% of the total Saudi Aramco disturbances.

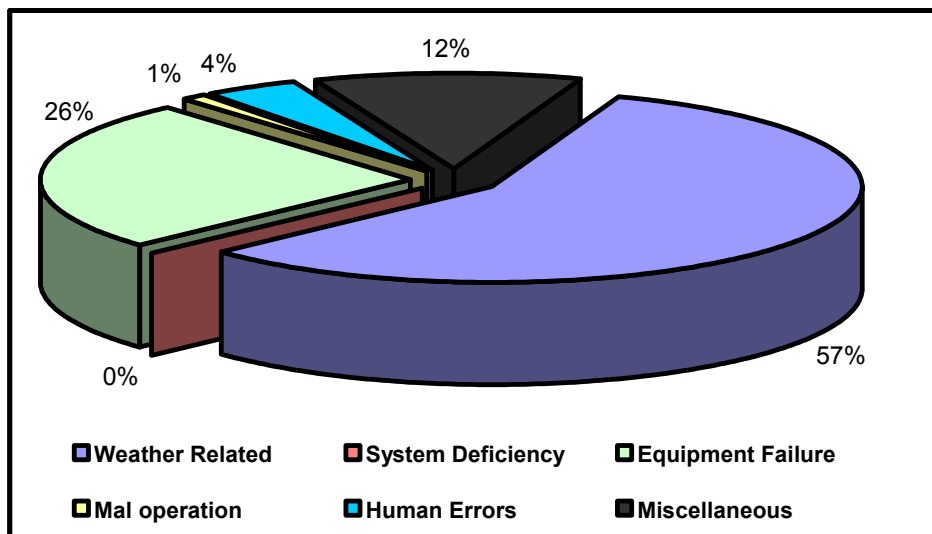


Figure 6.3: 2007 Cause of Disturbances affected Saudi Aramco

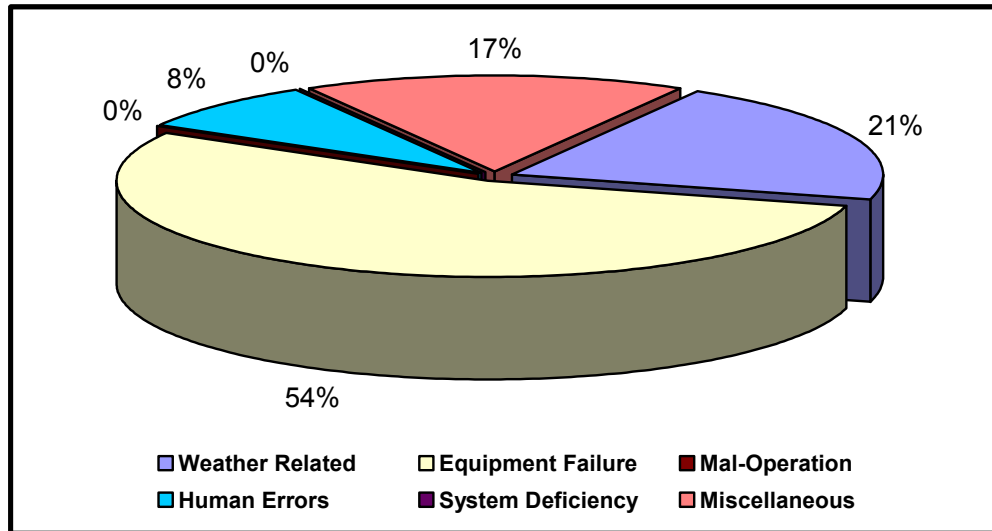


Figure 6.4: 2007 Cause of Disturbance affected SABIC

6.3 Disturbance Records – Voltage Levels

The reliability / Availability of the supplying system provided by SEC should also be taken in considerations when evaluating SEC – Customers nature of disturbances. Means of supplying systems provided by SEC to the major bulk customers (Saudi Aramco and SABIC) include different kV transmission levels (380, 230, 132, and 115 kV levels).

Table 6.1 shows the 2007 records of disturbances and the related voltage levels. As it can be seen from the table, the majority of the fault incidents that affect the operation system in Saudi Aramco are due to disturbances within the 115 kV supplying transmission systems (84 % of the interruptions are due to 115 kV faults). In the other hand, most of the SABIC disturbances are due to faults within the 380 kV faults (50 % of the interruptions are due to 380 kV faults). See the below table 6.1 and figures (6.5 and 6.6).

Table 6.1: 2007 Disturbance Records – Related Voltage Levels

Bulk Customers	Supplying kV Levels	Number of Interruptions	Total Interruptions
Saudi Aramco	230 kV	7 (7.5%)	94
	132 kV	8 (8.5%)	
	115 kV	79 (84%)	
SABIC	380 kV	12 (50%)	24
	230 kV	8 (33%)	
	115 kV	4 (17%)	

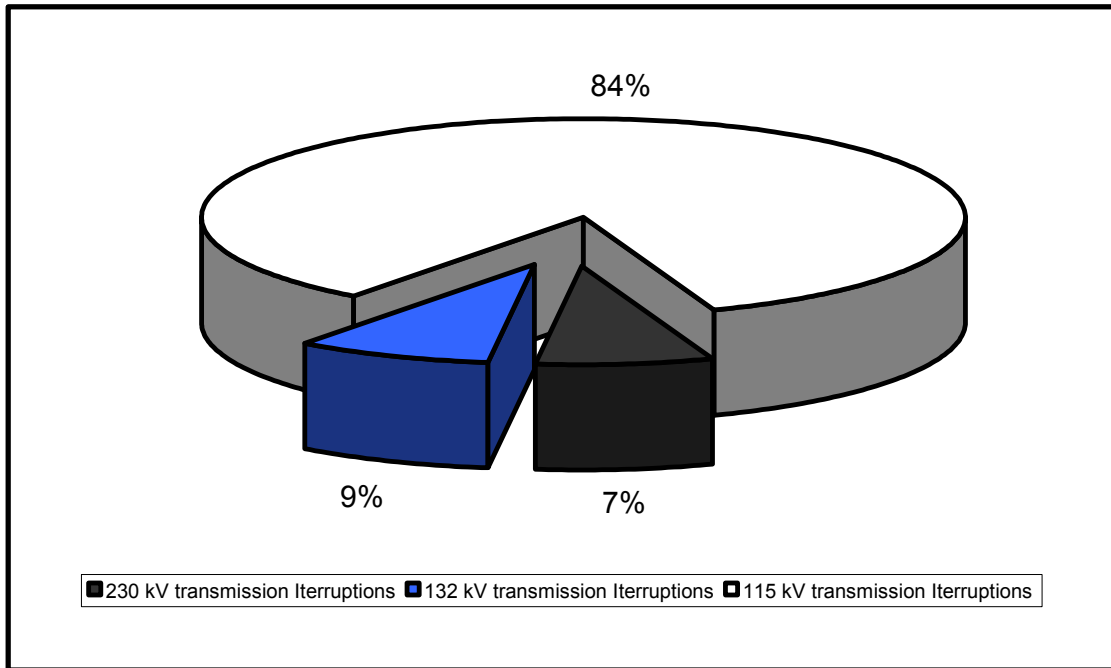


Figure 6.5: 2007 Percentage Parties of Voltage Levels Disturbance Affected Saudi Aramco

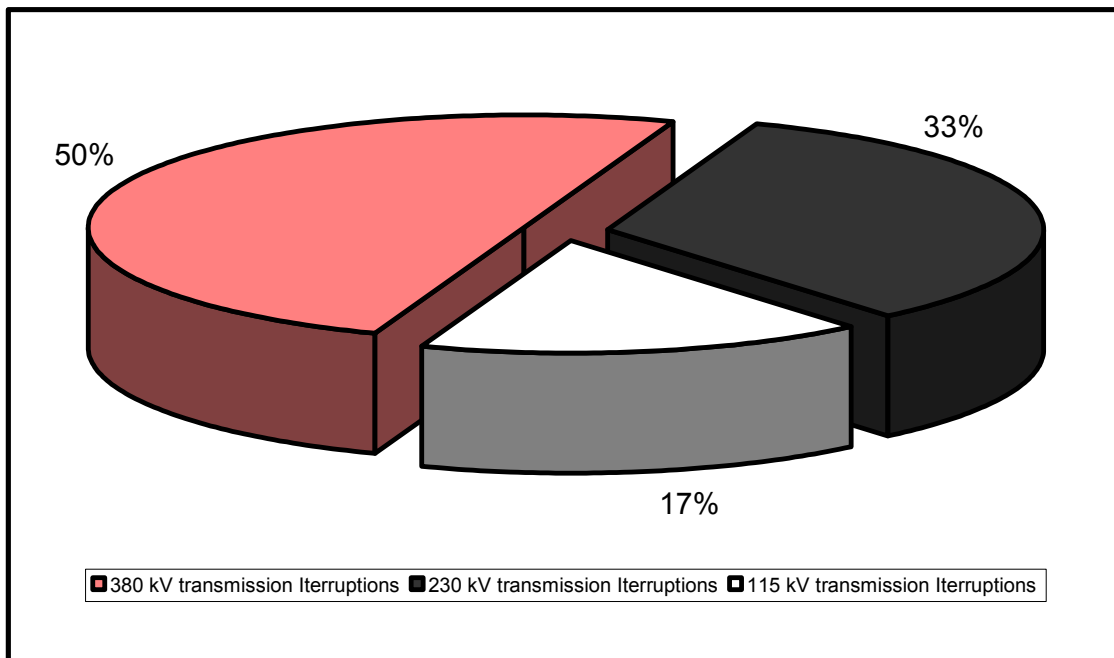


Figure 6.6: 2007 Percentage Parties of Voltage Levels Disturbance Affected SABIC

6.4 Disturbance Records – Locations

Defining locations that disturbances were originates is another aspect to be taken in consideration when analyzing disturbance records. This may help in building predictive or defense actions such as increasing maintenance processes and inspection tests at the interrupted locations that may result in decreasing the possibility of disturbances re-occurrences.

Among the different disturbance locations, the higher interruption frequency of occurrence that effect Saudi Aramco was reported by **EOA-South Area S/Ss** (Abqaiq, Shedgum, Faras, Ain Dar, Uthmaniyah, Hawiyah, and Khurais S/Ss) where 73 % of the total effected disturbances were originated from these **EOA- South Area S/Ss**. On the other hand, **Ghazlan, Qurrayah and Jubail Area S/Ss** are the main severe disturbance locations affected SABIC where 75 % of the total disturbances were originated from **Ghazlan, Qurrayah and Jubail Area S/Ss**

Tables (6.2 and 6.3) show lists of disturbances locations that affect Saudi Aramco as well as SABIC facilities while figures 6.7 and 6.8 indicate for the distribution of the percentage parties.

Table 6.2: 2007 Disturbance Locations Affected Saudi Aramco

Disturbance Location	No. of Disturbances
Safaniyah	3
Khursaniyah	6
Berri	3
Jubail Community	4
Juaymah	2
Abqaiq	2
Shedgum	2
Faras	1
Ain Dar	9
Uthmaniyah	16
Hawiyah	21
Khurais	18
Khuf	4
Hawtah	3
Total	94

Table 6.3: 2007 Disturbance Locations Affected SABIC

Disturbance Location	No. of Disturbances
Ghazlan	4
Qurrayah	9
Jubail	5
Fadhili	2
Berri	4
Total	24

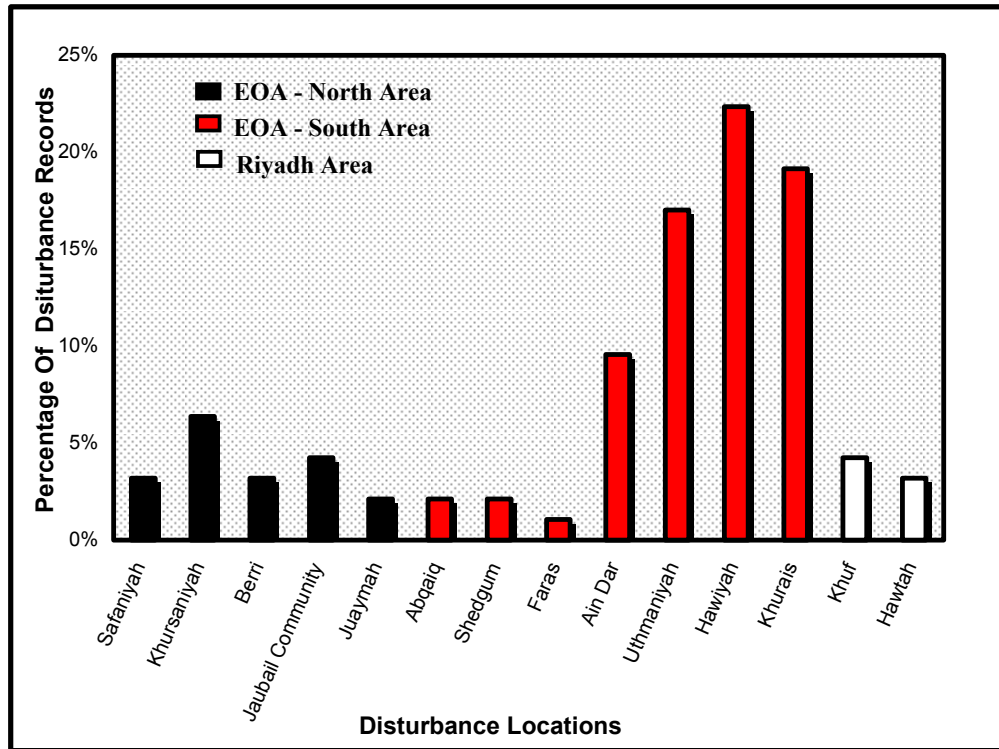


Figure 6.7: 2007 Percentage Parties of Disturbance Locations Affected Saudi Aramco

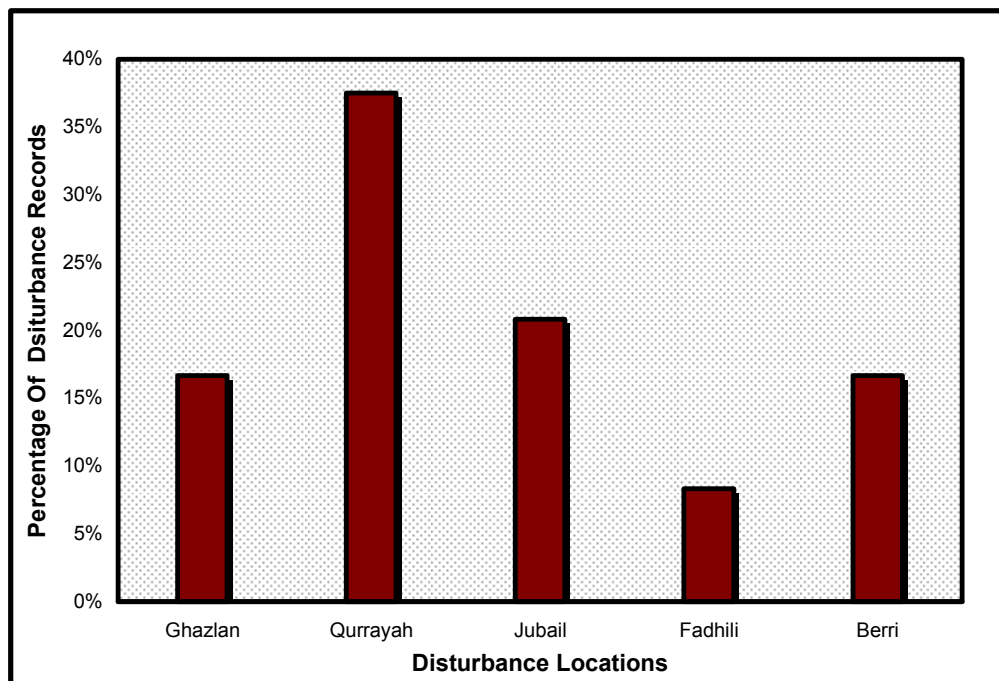


Figure 6.8: 2007 Percentage Parties of Disturbance Locations Affected SABIC

7. CONCLUSIONS

During the 2007 four meetings that have been assigned by the PQWG, the following conclusions have been drawn:

- Valuable information, technical data, and unify procedures related to PQ issues have been exchanged between SEC and the major bulk customers (Saudi Aramco and SABIC).
- Industrial bulk customer's PQ related experiences have been demonstrated throughout three successful presentations:
 - a- The first presentation "SEC-efforts during Summer 2007"
 - b- The second presentation "SABIC efforts to reduce power consumption during 2007 summer" by SABIC
 - c- The third presentation " SABIC efforts to reduce power consumption during 2007 summer " by Saudi Aramco
- Recommendations that already assigned in the last PQWG report (2006 – PQWG report) have been followed by the PQWG. The majority of the 2006 PQWG recommendations have been implemented (79 % of the recommendations) while the rest of the recommendations (21%) were under progress. The most significant actions taken are
 - a- Follow up the recent projects and studies relative to the development of national power quality standards.
 - b- Conduct comprehensive studies showing the possibility of implementing certain power quality mitigation techniques to improve service of quality supply delivered to the customers.
 - c- Exchange and discuss findings of some of the international Power Quality Groups / Committees and explore those that can have great effect in improving the issue of PQ in Saudi Arabia.
 - d- SEC needs to encourage for implementing Co-Generation systems with bulk customers (i.e. Saudi Aramco, SABIC...etc...).
 - e- Establish a PQWG Web-Page.
- Records of the 2007 bulk customers' disturbances have been discussed and analyzed by the PQWG. The analysis of the records reveal that:
 - a- PQWG reported (118) fault incidents that having major effects upon the operation of Saudi Aramco & SABIC industrial bulk customers. The major effects were recorded in Saudi Aramco where 80% of the total disturbances introduce significant effects on Saudi Aramco operating systems.
 - b- Whether related conditions are the main cause of Saudi Aramco Disturbances (57%) while equipment failure class is the major cause of SABIC related disturbances (54%).

- c- Majority of the fault incidents that affect the operation system in Saudi Aramco are due to disturbances within the 115 kV supplying transmission systems (84% of the interruptions are due to 115 kV faults) while most of SABIC disturbances are due to faults within the 380 kV faults (50% of the interruptions are due to 380 kV faults).

8. 2007 PQWG RECOMMENDATIONS

Following are the 2007 PQWG recommendations:

1. The group shall undertake all efforts to conduct the PQ Workshop each year.
2. PQ Workshop agenda and location shall be discussed and agreed on by the group members.
3. Insuring the participation of all affiliates in the working group meetings.
4. The activities of the PQWG shall be posted on SEC official site.
5. The universities and institutes represented in the working group shall carry out power quality studies needed by the represented companies.
6. The group shall discuss the impact of SEC costumers' generated PQ disturbances on other costumers.
7. SEC representatives shall conduct a presentation on SEC preparation for summer, each year.
8. Saudi Aramco and SABIC efforts to reduce power consumption during summer shall be presented each year.
9. The group shall consider the Participation of the PQWG in gcc-cigre events.
10. The group shall consider the establishing of study or working group under gcc-cigre.
11. The group members shall nominate one member as a contact person for gcc-cigre.
12. SEC Generation and distribution Sectors shall be invited to join the group.
13. The group shall invite ECRA and MARAFIQ to join the working group.
14. The group's meetings reference shall be changed to be in yearly bases instead of PQ workshop date.

9. 2008 PQWG PLAN

- Follow up the 2007 PQWG recommendations.
- Explore the rules and the requirements needed to participate in CIGRE events and to establish study or working group under CIGRE.
- Updated sample of the web-page presentation
- Conducting PQ Workshop on 2008.
- Participate in the proposed transmission Power Quality Standards Study through project monitoring committee which will review and assess the study outcome.
- Continue exchanging Power Quality data and information between PQWG members.
- Prepare for the 2008 PQWG annual report of achievement and shortcoming.
- Following represent the 2008 PQWG scheduled meeting:

Meeting No.	Date	Host	Location
1	Wednesday 27 th February 2008	KAAU	Jeddah
2	Wednesday 21 st May 2008	SEC	Abha
3	Wednesday 27 th August 2008	SABIC	Eastern province
4	Wednesday 24 th December 2008	Saudi Aramco	Shaybah field

Appendix (A)

PQWG Members

Name	Affiliate	Tel.	Fax	E-mail
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Khaled Al-Gahmdi	SEC (Main member)	01-4087535	01-4087291	APQCTDV@se.com.sa
Ali Al-Juaib	SEC (Main member)	01-4087545	01-4087291	APQDTDV@se.com.sa
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