

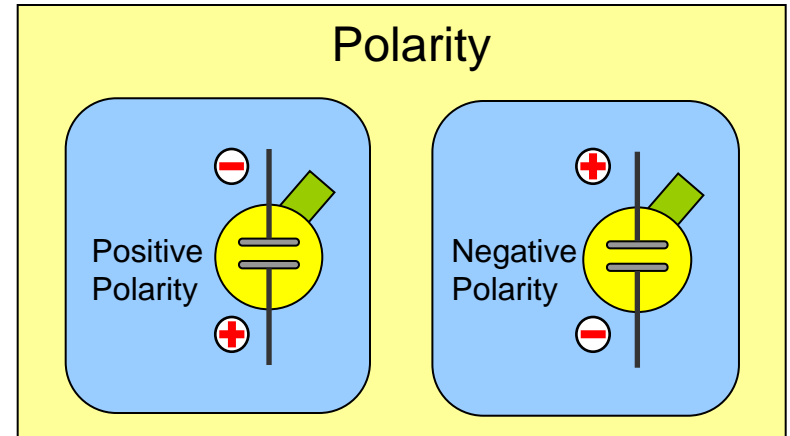
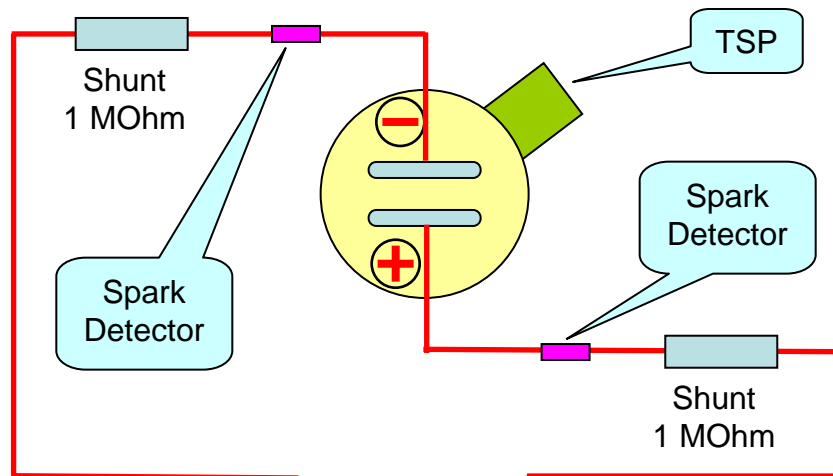
Conditioning tests

- **Separator history**
- **Conditioning at 150 kV**
- **Conditioning at 150 - 180 kV**
- **Spark rate**
- **Summary**

Separator History

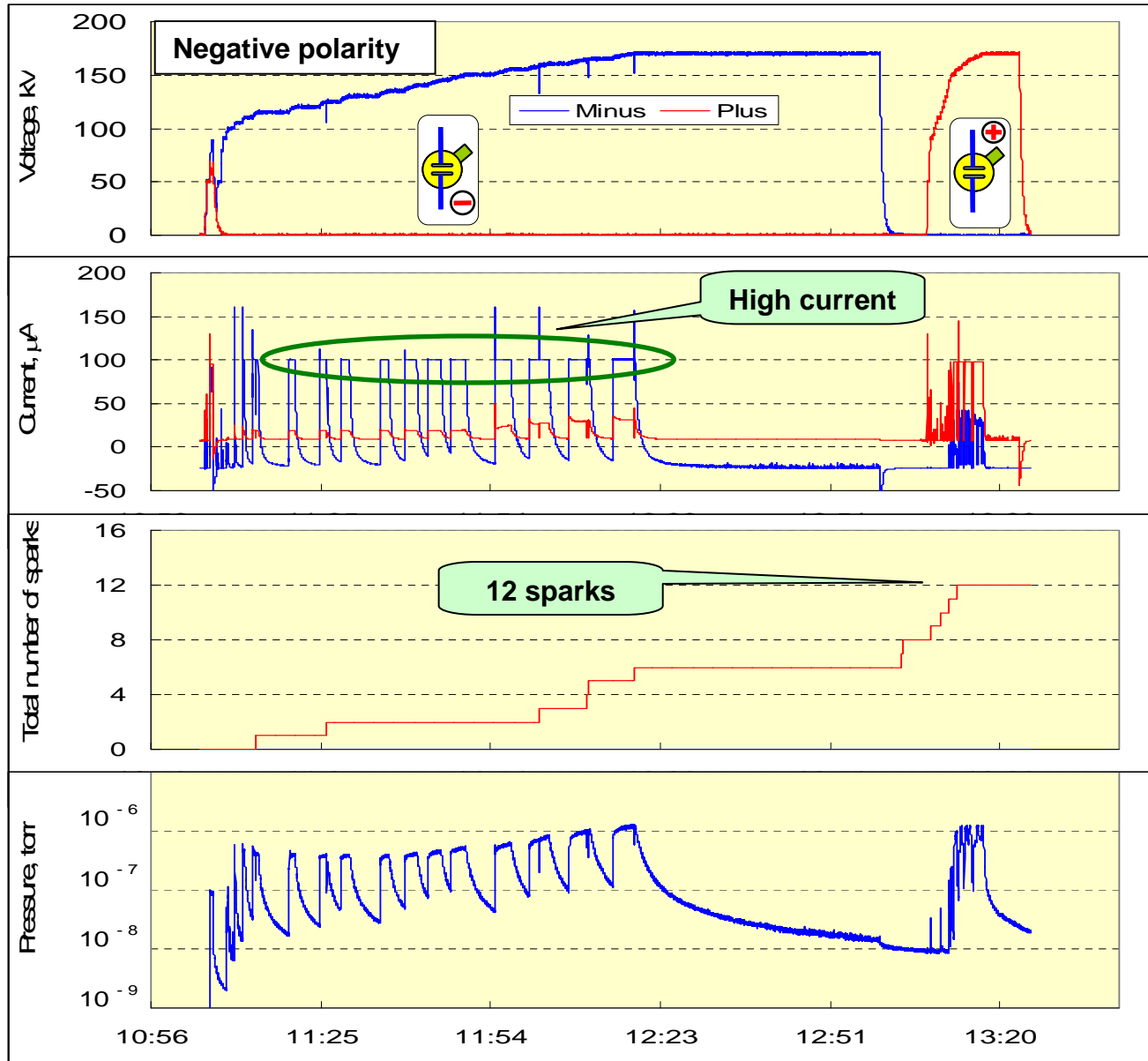
- separator with vertical plates reassembled in 2005 at MP-9
- new electro-polished stainless steel electrodes

Measurement Scheme



Dark Current Measurements for Electrodes (April 7, 2005)

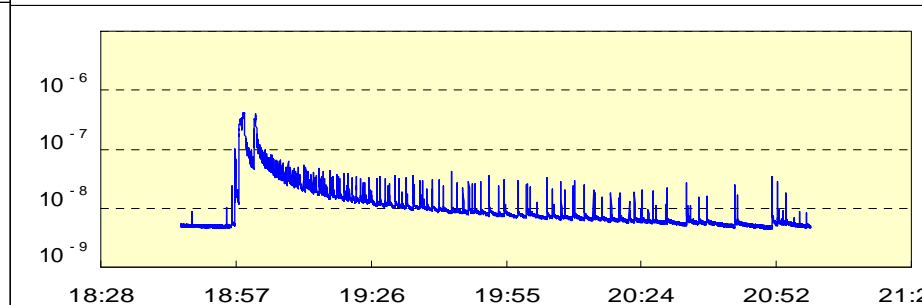
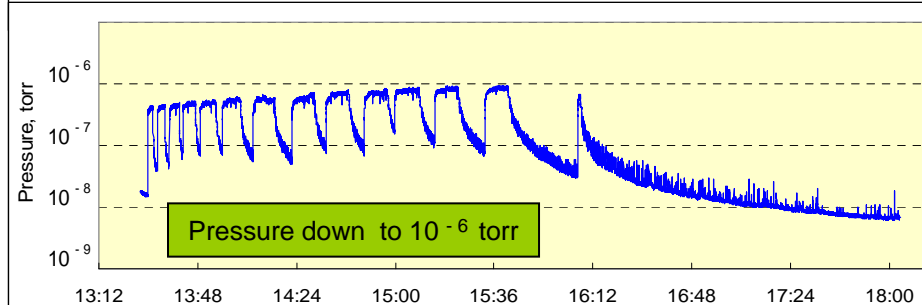
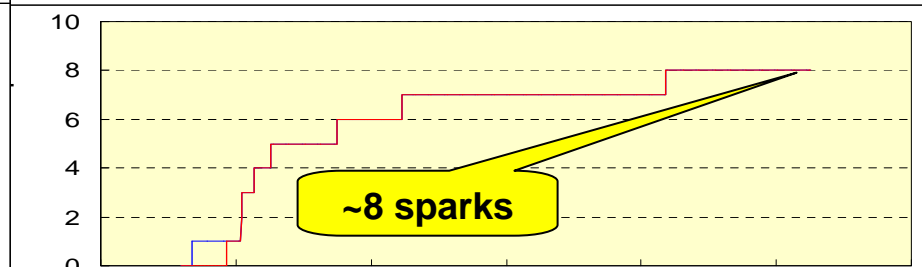
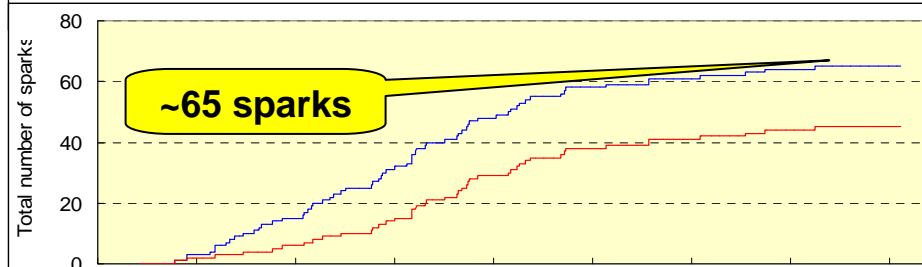
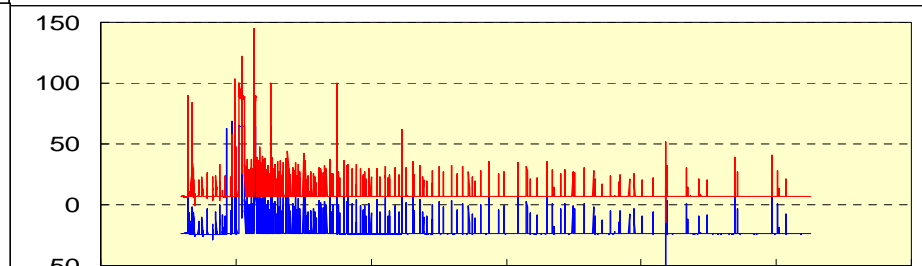
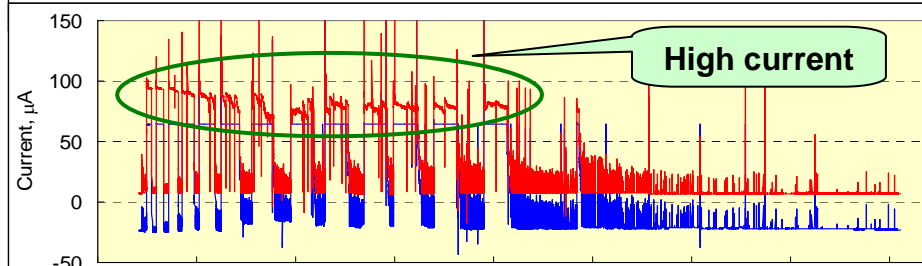
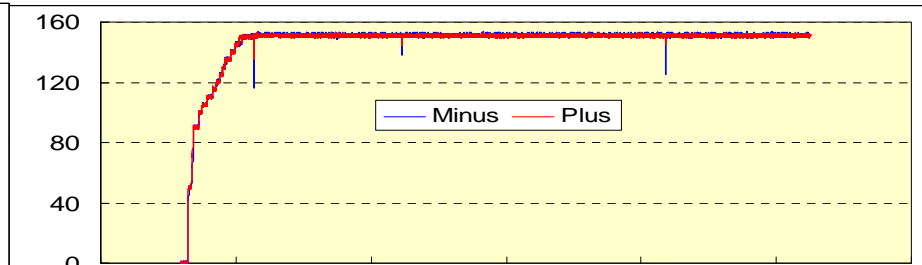
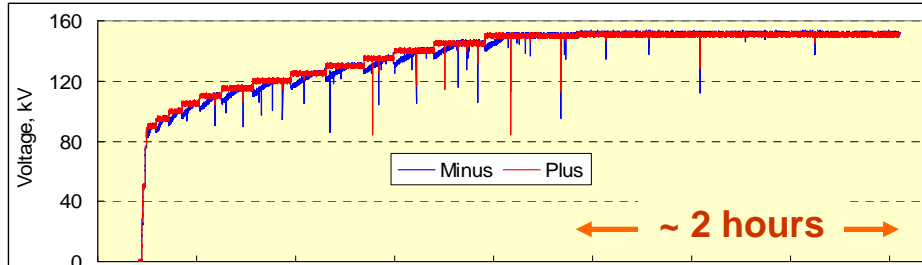
Only one + or - HV power supply connected to the separator



Conditioning up to 151 kV (April 7, 2005)

Positive Polarity

Negative Polarity

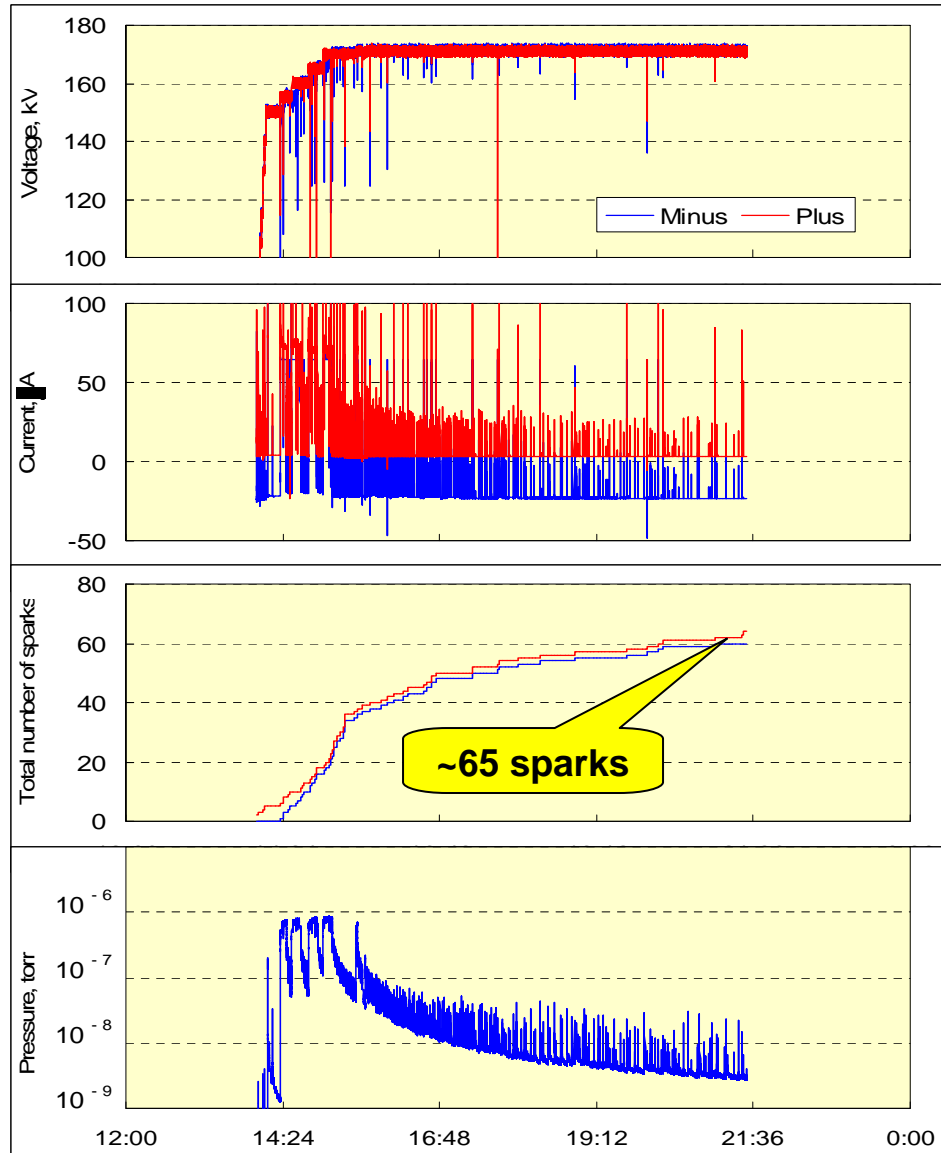


~ 5 hours

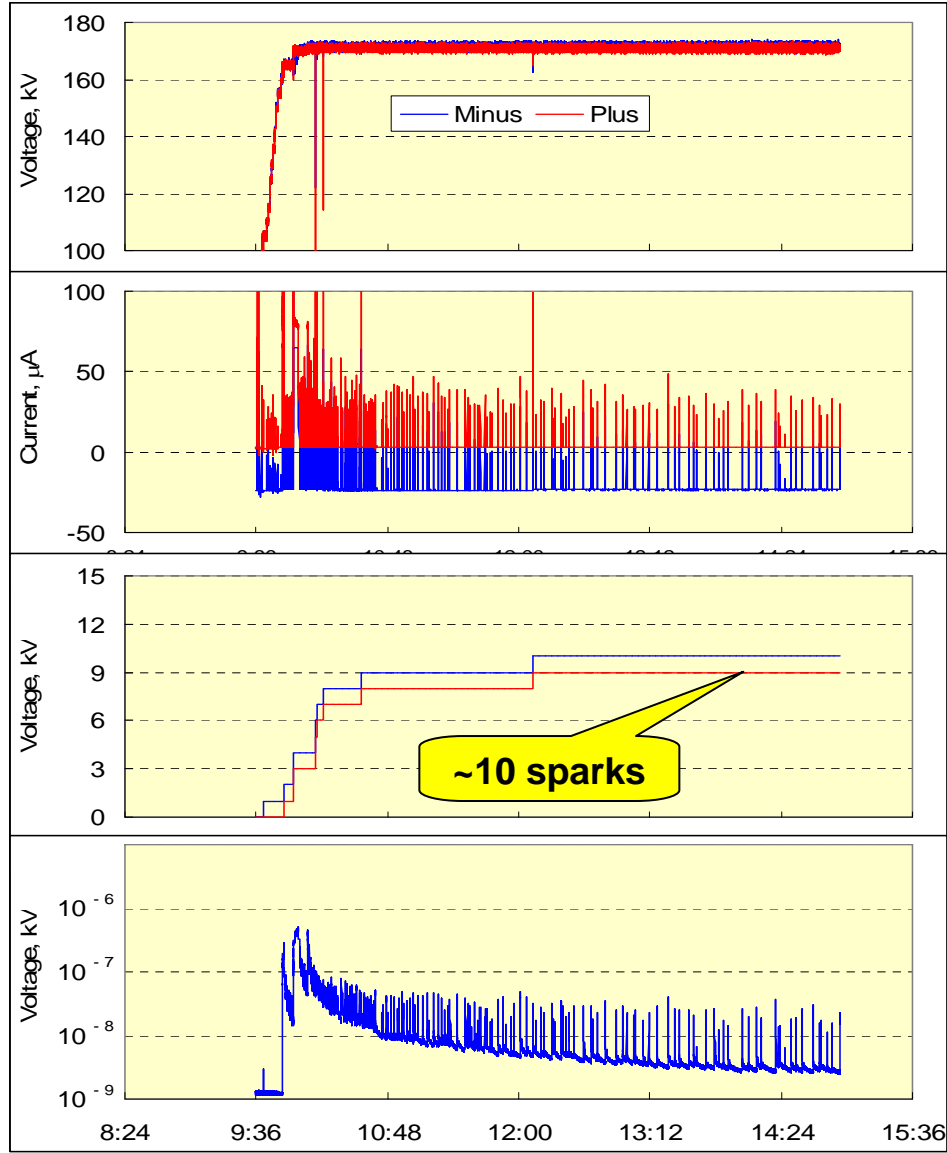
~ 3 hours

Conditioning 151 – 171 kV (April 28-29, 2005)

Positive Polarity



Negative Polarity

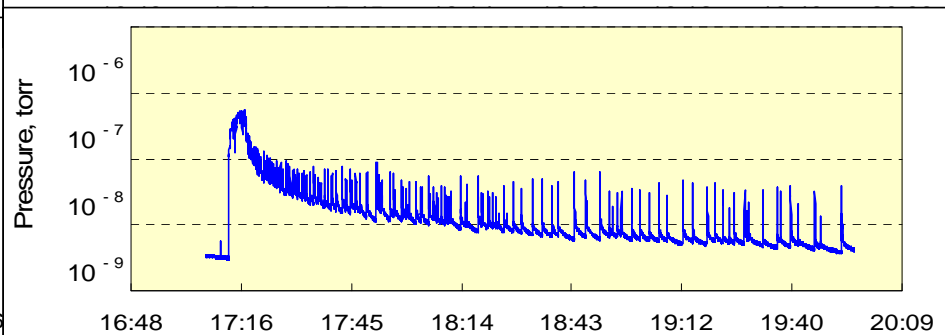
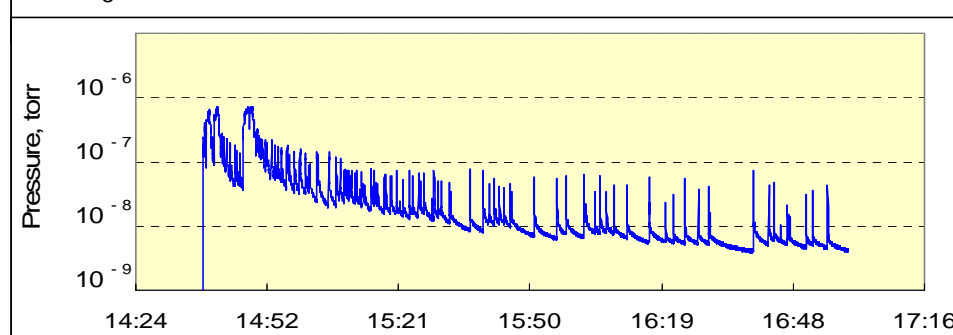
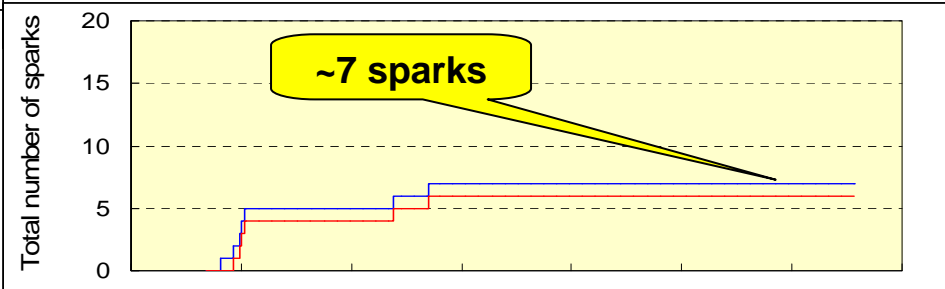
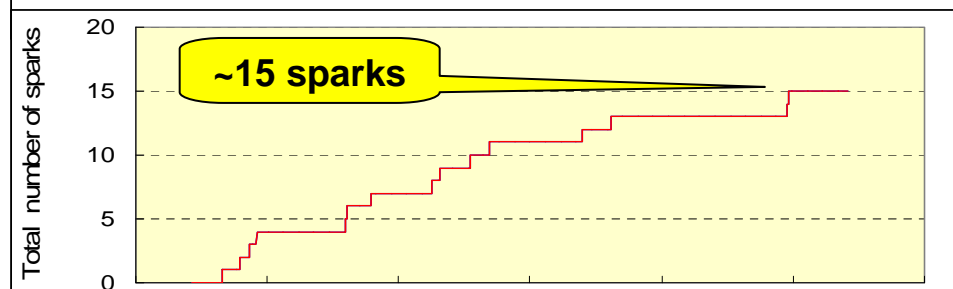
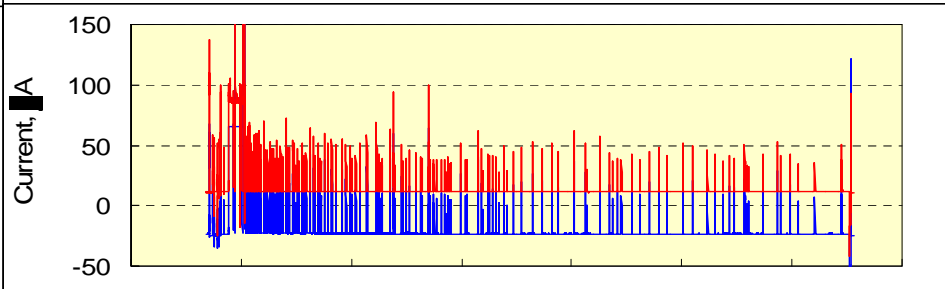
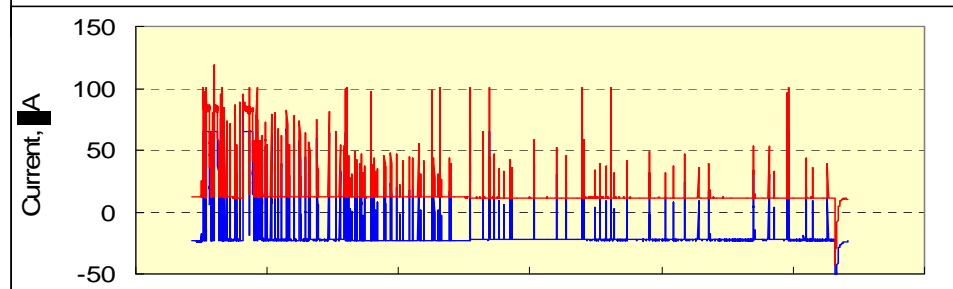
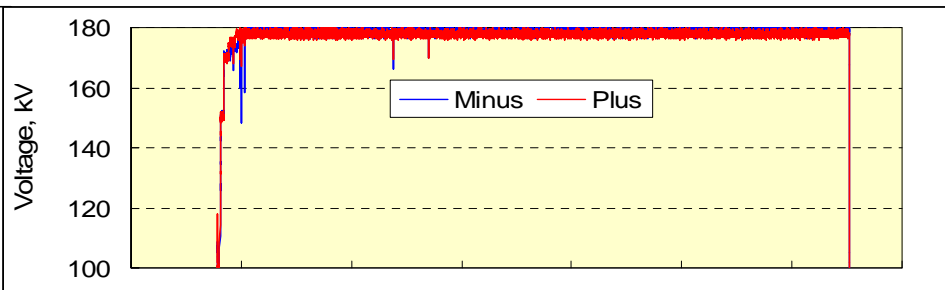
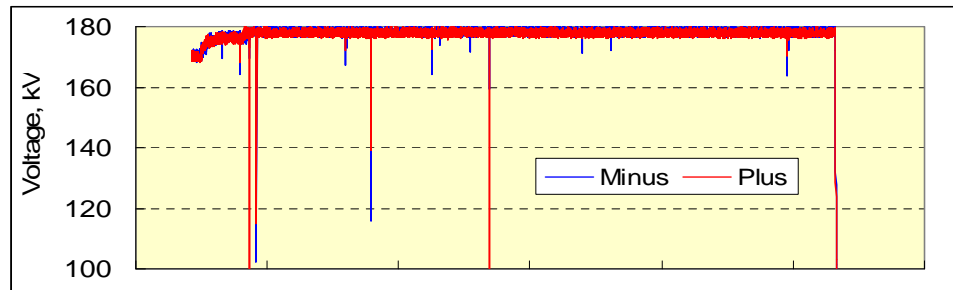


← ~ 7 hours → ← ~ 12 hours → ← ~ 3 hours →

Conditioning 171 – 178 kV (May 12, 2005)

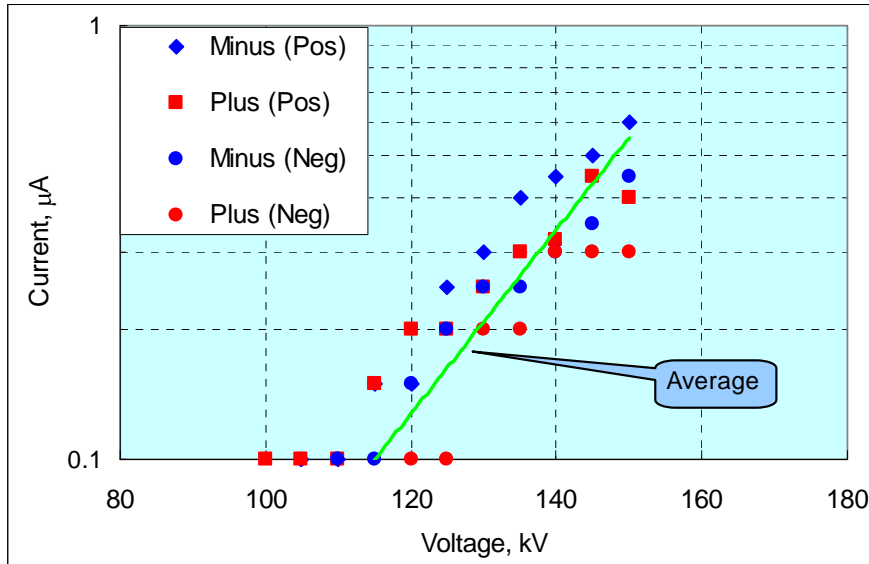
Positive Polarity

Negative Polarity

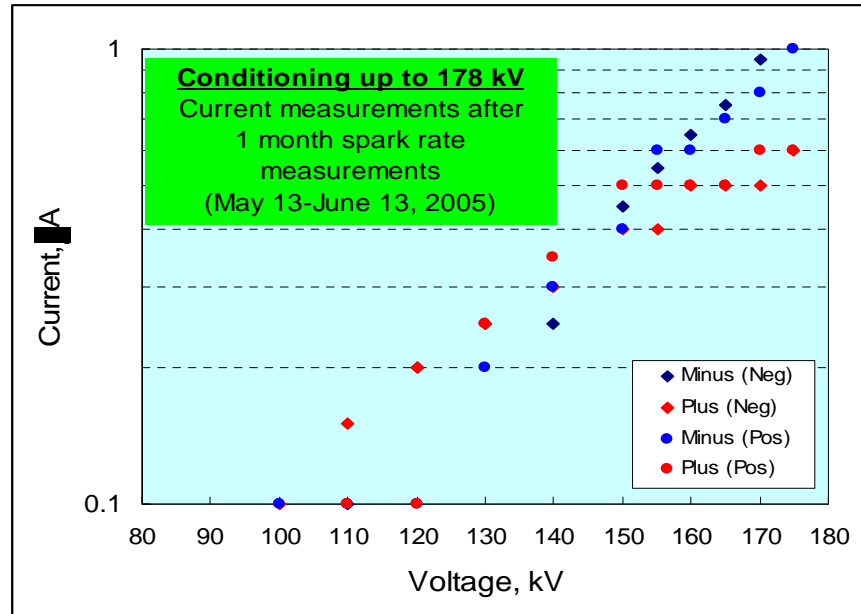
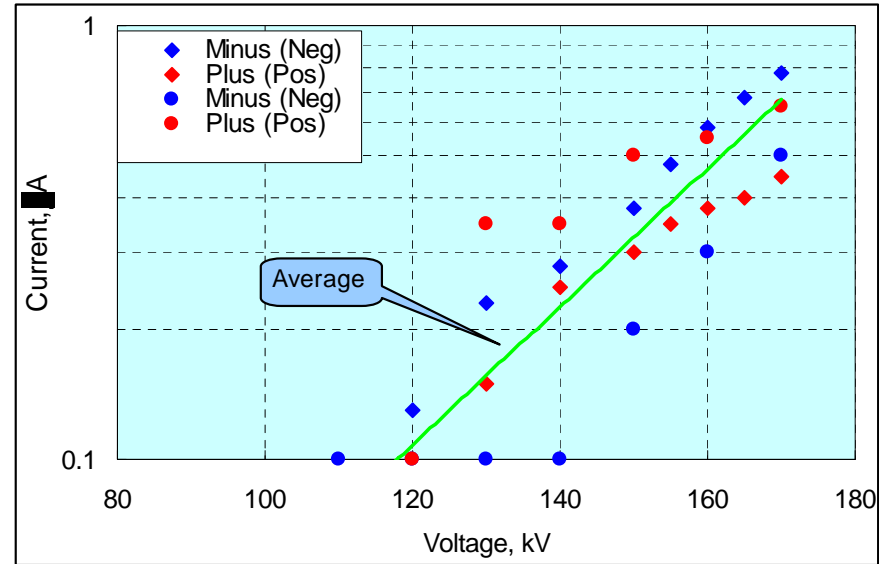


Dark Current Measurements

Conditioning up to 151 kV (April 7, 2005)



Conditioning 151 - 171 kV (April 29, 2005)

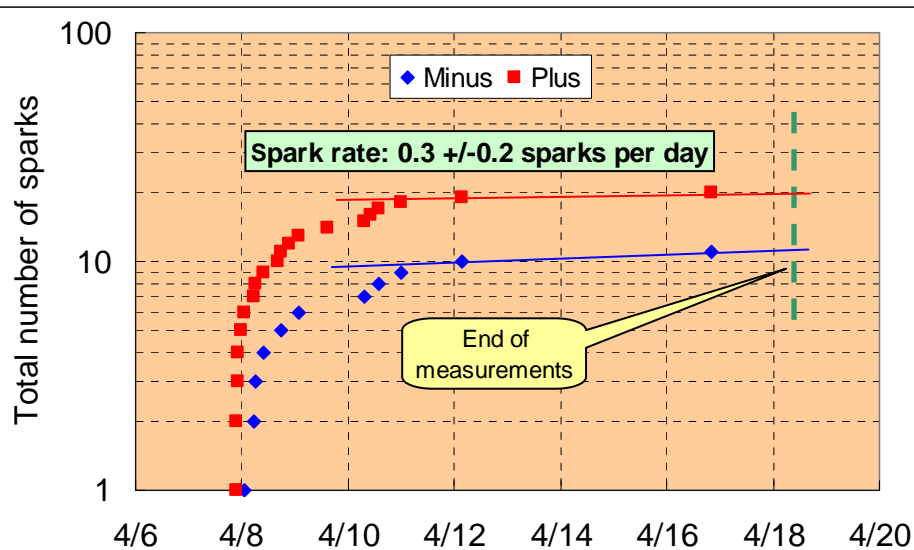


Current up to 175 kV is less than 1.0 μA

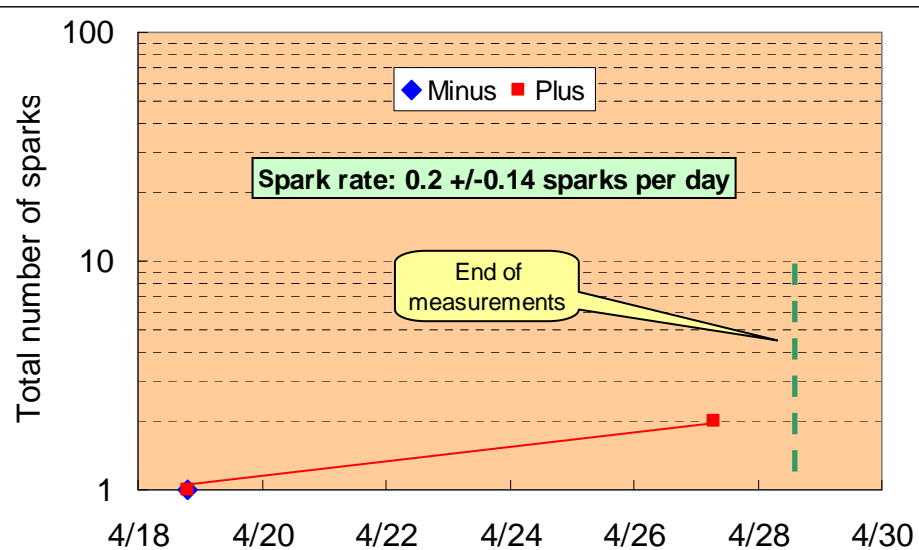
Conditioning up to 151 kV → Spark Rate Measurements

Spark rate measurements at 150 kV (Apr.7-Apr.28)

Positive polarity



Negative polarity



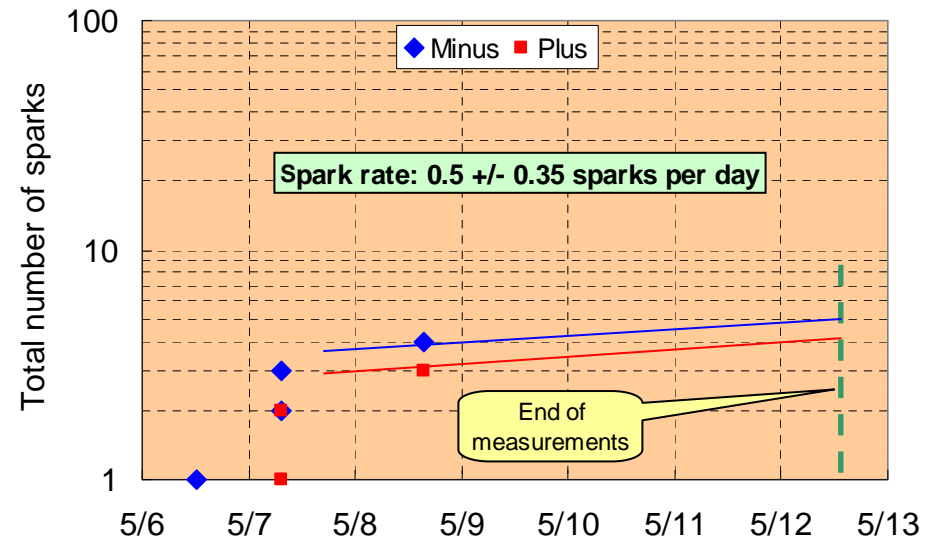
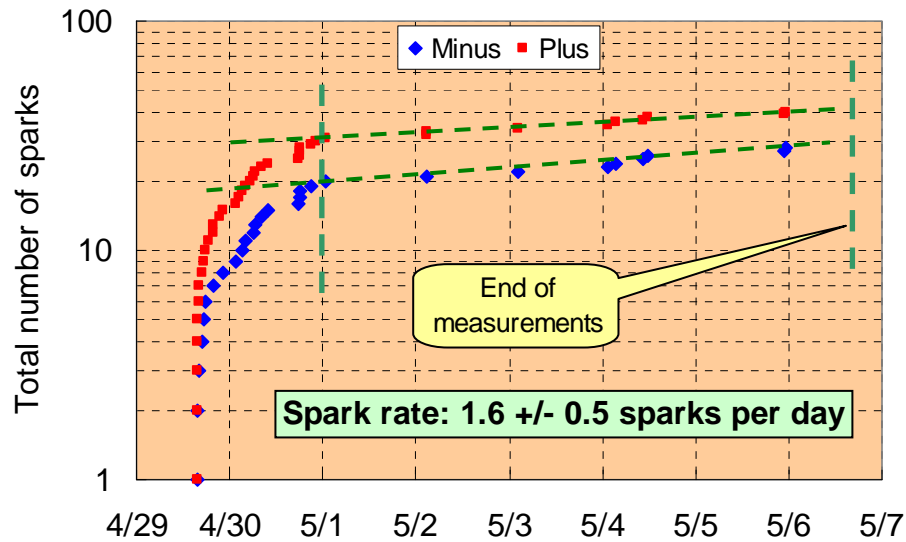
Spark rate at 150 kV:
- 0.25 +/- 0.15 sparks/day

Conditioning at 151 - 171kV → Spark Rate Measurements

Spark rate measurements at 170 kV (Apr.29-May12)

Positive polarity

Negative polarity



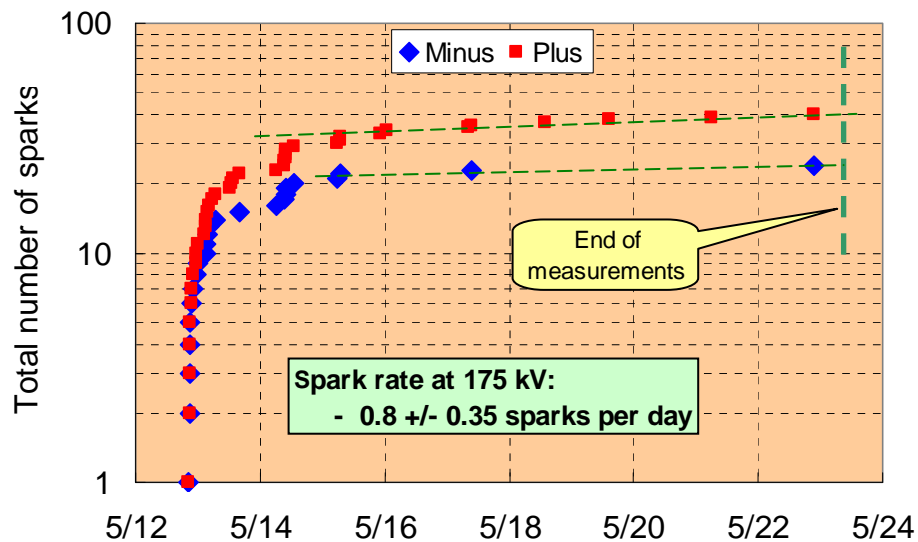
Spark rate:

- 1.6 +/- 0.5 sparks/day for positive polarity
- 0.5 +/- 0.35 sparks/day for negative polarity

Conditioning at 171 - 178kV → Spark Rate Measurements

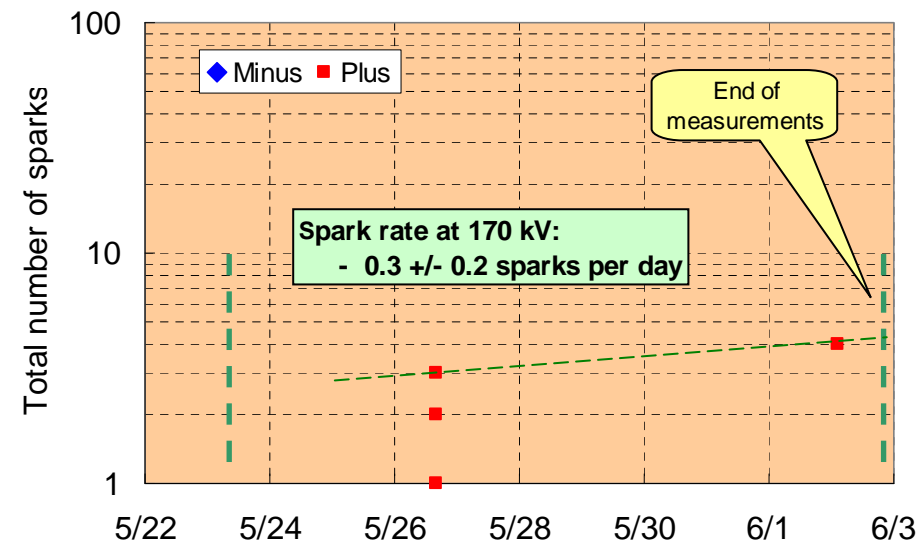
Spark rate measurements at 175 kV
(May12 – May 23)

Positive polarity



Spark rate measurements at 170 kV
(May23 – June 2)

Positive polarity



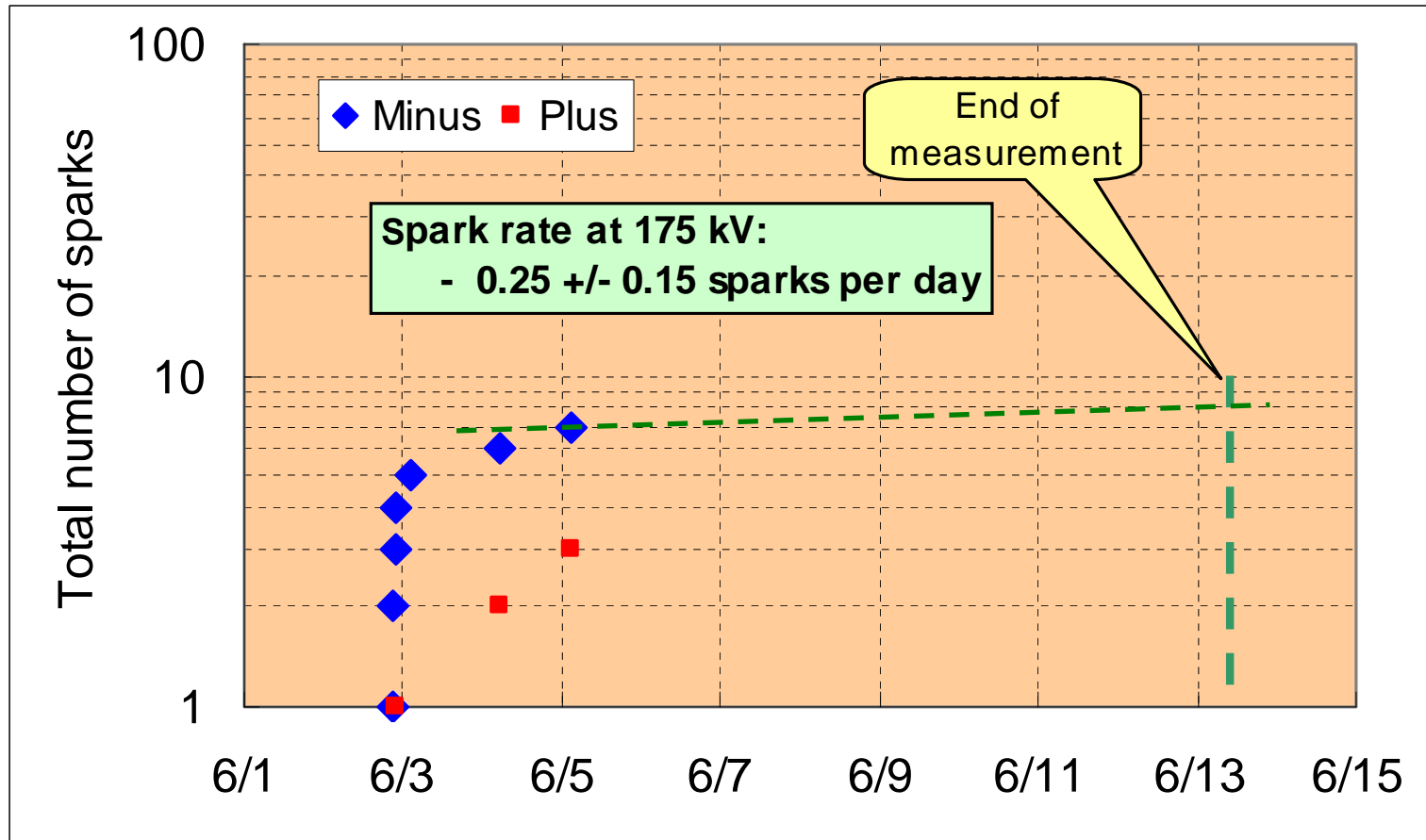
Spark rate (positive polarity):

- 0.8 +/- 0.35 sparks per day at 175 kV
- 0.3 +/- 0.2 sparks per day at 170 kV

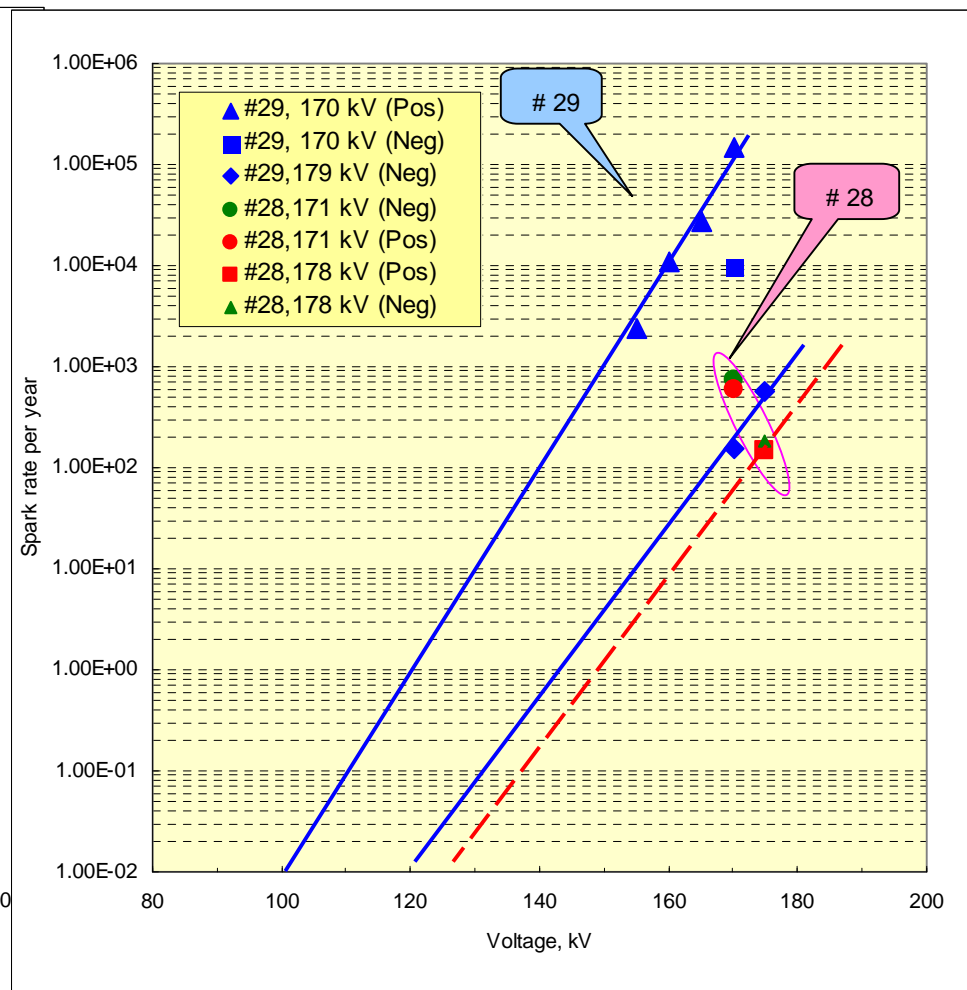
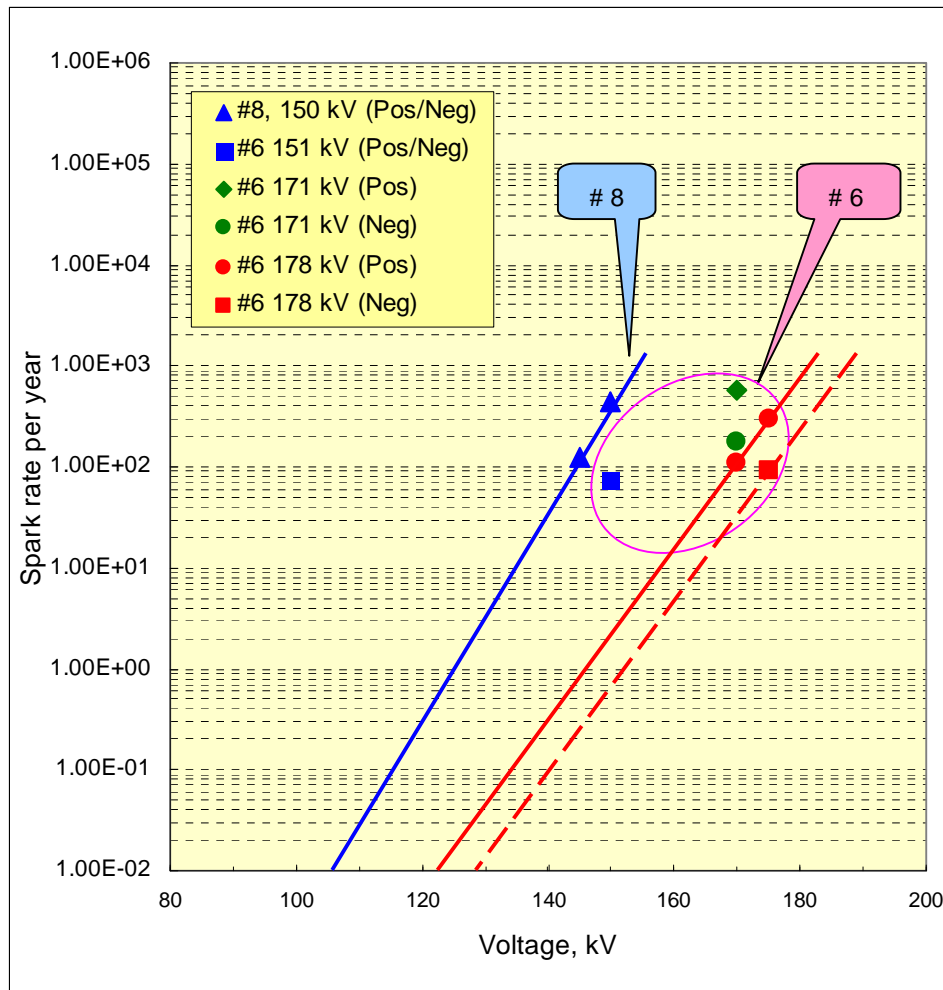
Conditioning at 171 - 178kV → Spark Rate Measurements

Spark rate measurements at 175 kV
(June 2 – June 13, 2005)

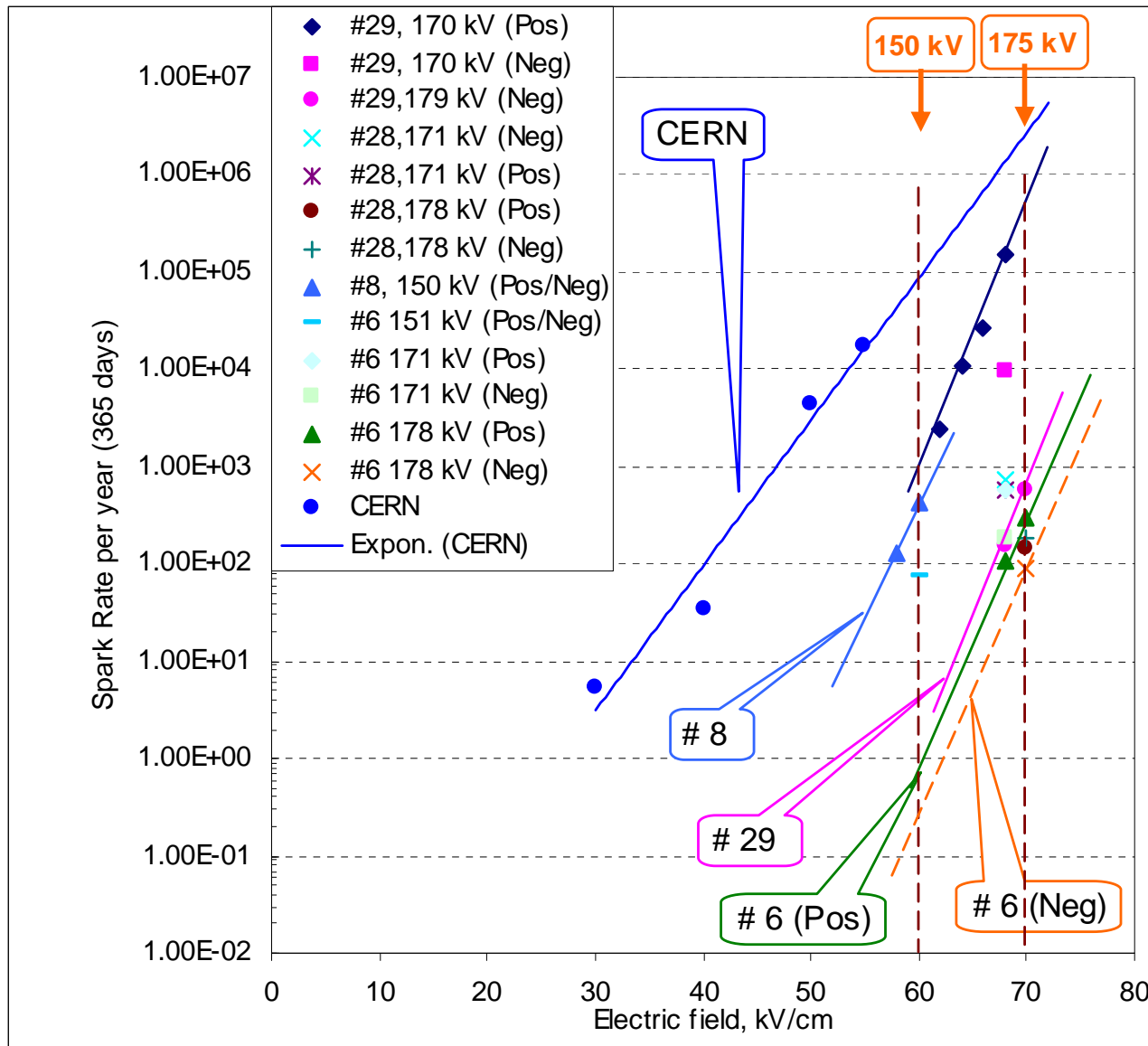
Negative polarity



Comparison Spark Rates for Different Separators



Spark Rate Summary



For comparison CERN data included in the plot.

CERN separator design:

- 6 cm gap
- 4 m long electrodes
- 26 cm electrode width

Conditioning tests for separator # 6 (April 7 – June 13)

Results:

- Separator conditioning was carried out up to 178 kV for both polarities
- Spark rate at 175 kV:
 - 0.8 +/- 0.35 (positive polarity)
 - 0.25 +/- 0.15 (negative polarity)
- Expected spark rate at 150 kV should be less than 1 spark/year
- Current up to 175 kV is less than 1 μ A for both polarities

The separator #6 has passed the conditioning tests and fully met the technical specification