

ABSTRAK

Penelitian ini dilakukan untuk mengamati kemunculan *Preliminary Breakdown* pada sambaran petir negatif awan ke bumi sesuai dengan terminologi BIL pada data yang terekam dari bulan Januari s/d bulan April tahun 2016 di Jurusan Teknik Elektro Universitas Andalas Padang. Kemunculan *Preliminary Breakdown* atau bisa disebut sebagai *Initial Breakdown* pada sambaran petir negatif awan ke bumi dibedakan berdasarkan morfologi petir yang dapat dibagi menjadi dua jenis yaitu petir negatif normal awan ke bumi (CG-) dan petir negatif hibrid awan ke bumi yang biasa disebut sebagai permulaan dari petir *Intra Cloud* (IC) lalu berkembang menjadi petir *Cloud to Ground*. Persentase petir negatif normal (CG-) dan petir negatif hibrid (IC) itu adalah 68% dan 32% masing-masingnya. Dari kedua jenis petir itu dilihat polaritas *Initial Breakdown* sebelum terjadi *Return Stroke* dimana polaritas itu menandakan struktur muatan yang ada di awan yang direfleksikan ke dalam bentuk pulsa perubahan medan listrik petir. Berdasarkan morfologi petir dan polaritas *Initial Breakdown* yang ditemukan maka disimpulkan setiap sambaran petir negatif awan ke bumi selalu diawali oleh *Preliminary Breakdown*. Karakteristik *Preliminary Breakdown* berdasarkan setiap parameter yang telah diukur dengan nilai rata-rata aritmatik, yaitu PB/RS Rasio (%), PB-RS Separation, Pre-Return Stroke Duration, Durasi Breakdown (B), Durasi Intermediete (I), Durasi Leader (L) secara berurutan adalah 13,3 %, 17,239 ms, 80,588 ms, 31,715 ms, 6,660 ms, dan 11,524 ms. Beberapa hal yang mempengaruhi pulsa *Preliminary Breakdown*, yaitu adanya noise, jarak sambaran petir terhadap sensor medan listrik, waktu pre trigger, serta kondisi geografis suatu daerah.

Kata Kunci : *Preliminary Breakdown/Initial Breakdown*, Morfologi Petir, Petir negatif normal awan ke bumi (CG-), Petir negatif hibrid awan ke bumi (IC).



ABSTRACT

This research was conducted to observe the present of Preliminary Breakdown in lightning flashes negative cloud to ground according to with the terminology BIL on data recorded from January until in April 2016 in the Department of Electrical Engineering, Andalas University of Padang. Occurrences Preliminary Breakdown or can be referred to as Initial Breakdown in negative cloud to ground lightning flashes are distinguished based on morphological lightning can be divided into two types: normal negative cloud to ground lightning flashes (CG-) and hybrid negative cloud to ground lightning commonly referred to as the beginning of Intra Cloud (IC) and then developed into the Cloud to Ground lightning. The percentage of normal negative lightning (CG-) and hybrid negative lightning (IC) that is 68% and 32%, respectively. Of the two types of lightning were seen polarity Initial breakdown before it happens Return Stroke which polarity it signifies structures existing cargo clouds reflected in the pulse shape change of the electric field of lightning. Based on lightning morphological and Initial Breakdown polarity found it concluded any negative cloud to ground lightning is always preceded by a Preliminary Breakdown. Characteristics Preliminary Breakdown by every parameter measured by the average value of arithmetic, namely PB / RS Ratio (%), PB-RS Separation, Pre-Return Stroke Duration, Breakdown duration (B), Intermediete duration (I), Leader duration (L) are respectively 13.3%, 17.239 ms 80.588 ms 31.715 ms, 6.660 ms and 11.524 ms. Somethings that affect the pulse Preliminary Breakdown, namely the presence of noise, the distance of a lightning strike to the electric field sensor, pre trigger time, as well as the geographical conditions of an area.

Keywords: *Preliminary Breakdown, Morphology Lightning, normal negative cloud to ground lightning flashes (CG-), hybrid negative cloud to ground lightning.*

