Q. SUBSTATIONS

REBUILD SUBSTATIONS (POOLED), p. 10 of 81, $710,000

PUB 5.0
Please provide a history of expenditures for each year from 1990 to 2005F for lightning arrestors, indicating whether these expenditures were related to transmission lines, distribution lines, substations or other.

A. Lightning arrestors are classed as either transmission or distribution voltage, and are installed to protect substation and distribution equipment from damage due to lightning strikes. Such lightning strikes may occur close to the protected equipment, or may strike at a distance and travel along distribution or transmission lines to where the equipment is located.

All of Newfoundland Power's transmission class voltage arrestors are located in substations, close to the equipment that they are designed to protect. Newfoundland Power installs lightning arrestors on all substation transformers.

Newfoundland Power has increased its use of lightning arrestors on its distribution equipment in recent years, primarily due to experience with lightning storms and associated failures of distribution transformers. A detailed review of this practice is contained in the report *Distribution Lightning Arrestors* filed in Newfoundland Power's 2004 Capital Budget Application as Distribution Appendix 2, Attachment B.

Newfoundland Power's system of accounts does not specifically track expenditures on lightning arrestors. However, the Company does have a record of the number of lightning arrestors issued from inventory each year since 1995.

Table 1 on page 2 of 2 shows the number of distribution and transmission class lightning arrestors issued from inventory each year since 1995, including both new installations and replacements for arrestors that have failed in service. Table 1 also provides the cost of materials for those lightning arrestors in 2005 dollars. Table 1 does not include the associated cost of installation.

Since 1995, the Company has acquired and installed an additional 24 lightning arrestors as part of the purchase of four substation power transformers. Information regarding these integrated lightning arrestors is also not included in Table 1.

Similar information with respect to the number of lightning arrestors issued from inventory during the period from 1990 to 1994, and their respective cost, is not readily available.

1
2

Table 1

Lightning Arrestors Issued From Inventory
1995 – 2005 [1]

	Distribution Class Lightning Arrestors		Transmission Class Lightning Arrestors	
	Number	**Cost of Materials (2005 $)**	**Number**	**Cost of Materials (2005 $)**
1995	545	$ 24,570	3	$ 1,795
1996	511	$ 26,036	6	$ 3,370
1997	704	$ 35,160	4	$ 6,762
1998	754	$ 37,995	3	$ 1,648
1999	1,316	$ 63,251	3	$ 1,722
2000	1,478	$ 80,890	18	$15,213
2001	1,427	$ 73,247	11	$ 6,289
2002	2,126	$ 94,941	4	$ 2,100
2003	5,177	$226,006	13	$ 7,339
2004	6,198	$271,325	14	$ 8,288
2005 YTD	2,819	$120,835	14	$13,185

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4 [1] The information provided for 2005 represents year-to-date data only.