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Note: **V-2**

Pretapering and Vacuum Implications.

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Introduction.

The length of *Long/Short* straights in SESAME is 4.44 m and 2.38 m respectively [1].. In order to maximize the available space for the ID with small gap, it is possible to begin the tapering just after the QF quadrupole. If this solution will be adopted on all day-one machine or will be implemented later on has not yet been decided.

In this note we present the vacuum implications assuming that the pretapering is present on all the straight sections.

Basic Assumptions.

1. Standard (30→20 mm) taper in all the pre-dipole and post-dipole vacuum chambers with the straight section vacuum chamber height reduced to 20 mm.

2. The 200 mm Pumping port in the post-dipole vacuum chamber is substituted by either one 300 (l/s) pump between SF and QF or two 150 (l/s) pumps between (SF, QF) and (QD, SD).

Pressure Profile.

We use **MATLAB** program to evaluate the pressure profiles for many alternative pumping schemes. In Fig. 1 and 2 are shown the pressure profile in the Main Ring equivalent to Case # 2 and # 3 respectively [2].

In these calculations we have included the Stimulated Photon Desorption due to photons with energy greater than 10 eV from the up-stream slot.

Conclusions.

The average dynamic pressure accompanying these modifications is slightly increased (1.15→1.31 nmbar) for case #2 and (1.12→1.26 nmbar) for case #3, but we gain in the ID's available length (3770→4160 mm) for the *Long* straight and (1710→2100 mm) for the *Short* one. This length increase will provide more flexibility to accomodate long ID's, more valves and up to 4 RF cavities in one long straight section.

References.

1. G. Vignola, M. Attal - SESAME Technical Note **O-1**, December 2004.
2. F. Makahleh, A. Amro - SESAME Technical Note **V-1**, August 2005.

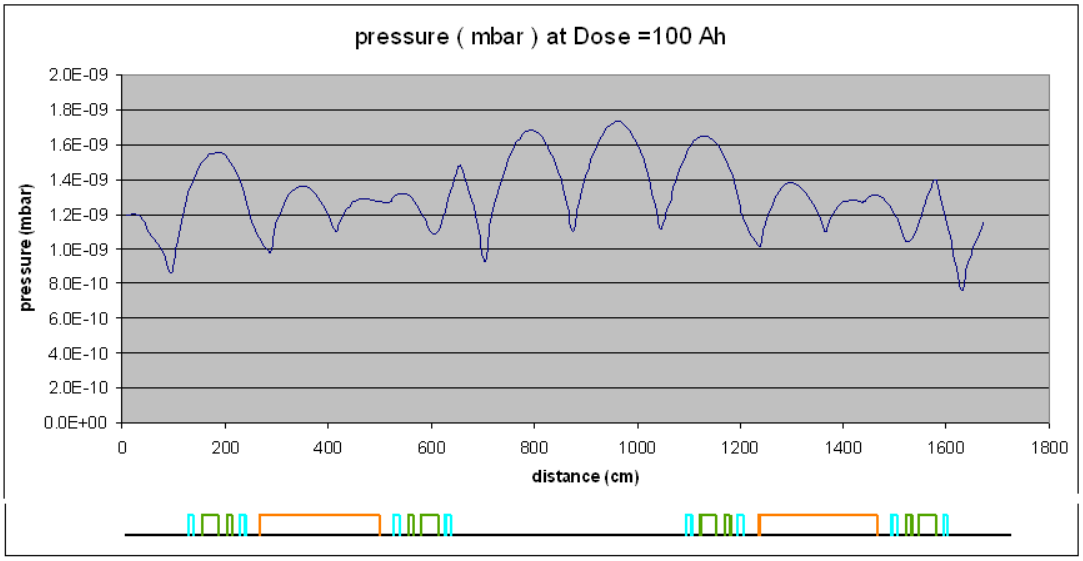

Figure 1: Unit cell dynamic pressure profile (mbar) for case # 2.

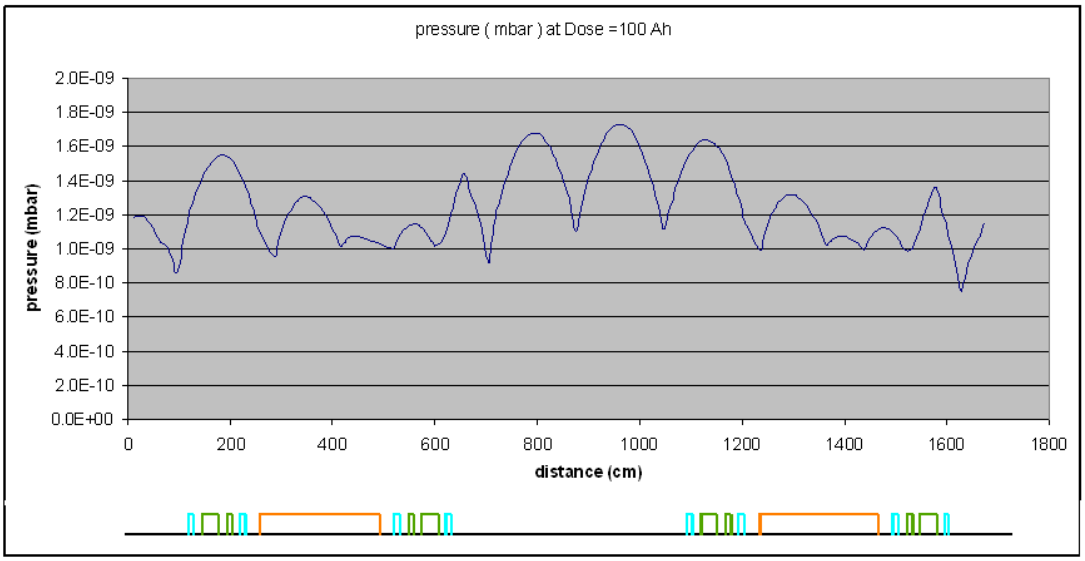

Figure 2: Unit cell dynamic pressure profile (mbar) for case # 3.