Project Title:	Compact Rapidly Adjusting Filter
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Program Objective

The technical objective of this effort is to determine the feasibility of constructing CRAF filters (Compact Rapidly Adjusting Filters) to be used at the output of a broad range of coupled cavity TWTs. The process will also result in enough technical data to facilitate the design of a CRAF. The specific objectives of the program are as follows.

1. Determine the availability of TWTs that have adequate power and duty to satisfy MIL-STD-464 and MIL-HDBK-235. This will tell us what frequencies and powers to focus on when researching filters.
2. Determine the availability of high order filters in those frequency and power ranges. The frequency range of MIL-STD-464 will be considered where it matches available high power tubes.
3. Investigate the power handling capability of current filter technology.
4. Investigate a means of increasing the power handling capability of available filters where required.
5. Characterize the configuration (shape, dimensions) of filters for various frequency ranges and their applicability to the filter design.
6. Switchable design:
    a. Investigate a mechanism for automatically switching between filters while maintaining connection to the transmitter and antenna. Both existing commercial switches and new designs will be considered.
    b. Investigate a means of easily loading a new set of filters into a switchable design.
7. Tunable design:

a. Investigate a mechanism for automatically tuning a filter that is built into a transmitter. It must be tunable to pre-designated frequencies as well as newly selected frequencies.
8. Investigate losses associated with the filter and mechanism at various frequencies.
9. Investigate methods of maintaining pressurization during switching or tuning.
10. Estimate the final size of a CRAF at various frequencies based on the information gathered.

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