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[illegible]

3. Discussion

3.1. Atmospheric Considerations

-or the purpose of de-ning atmospheric -indo-s- -e consider the s-- to -e e-ectivel- -loc-ed -hen the s-stem temperature rises to three times the value in the minima of the -indo-s. -pectrall- -loc-ed regions are thus 51--- --z 11--123 --z- fro

the -ater line -hich -loc-s the -arth-s atmosphere is a ver- strong maser in celestial sources- and the optical depth in the atmosphere ma- -e as lo- as unit-- permitting astronomical o-servations of -oth the 1-3 and 325 --z -ater lines from dr- sites. -e have made no attempt to specif- receiver -ands -hich cover the o--gen--loc-ed 51--- --z and 11--123 --z regions. -o- energ- -ground state- transitions of -ater ver- e-ectivel- -loc- transmission in the 3-5-3-5 --z- 532---2 --z and -2----- --z -ands. --cept for 51--- --z- 11--125 --z- 3---3-5 --z- 532---2 --z and -2----- --z- all fre-uencies are covered -- a receiver -and in the conservative plan -e devise -Ta-le 3- -elo--.

3.2. Astronomical Considerations

-or an instrument -ith ver- limited sensitivit-- such as have e-isted in the pioneering da-s of millimeter radio science- one might construct a list of critical transitions- around -hich the fre-uenc- coverage for an instrument might -e

planned. -or the MMA it is useless to pose the -uestion- as thousands of clouds -ill -e visi-le in thousands of lines. The num-er of lines of interest might -estimated

sought- as a minimum num-er- to the num-er in a complete census of lines e-pected in a particular -indo-.

The list of lines -eing considered -- the IA- Committee on the Allocation of -re-uencies for fre-uenc- protection runs to -ve pages- covering some three hundred lines considered critical to the science. -o complete line list e-ists for an- fre-uenc- -indo-. Recentl- Turner -private communication- has attempted to construct such a list in order to aid in identi-cation of emission o-served in his surve- of the 2mm -indo-. This list includes ten thousand transitions in 4- --z cove

lines- and Pic-ett -o-served and predicted lines- in ----searcha-le -les- sucas the ones

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