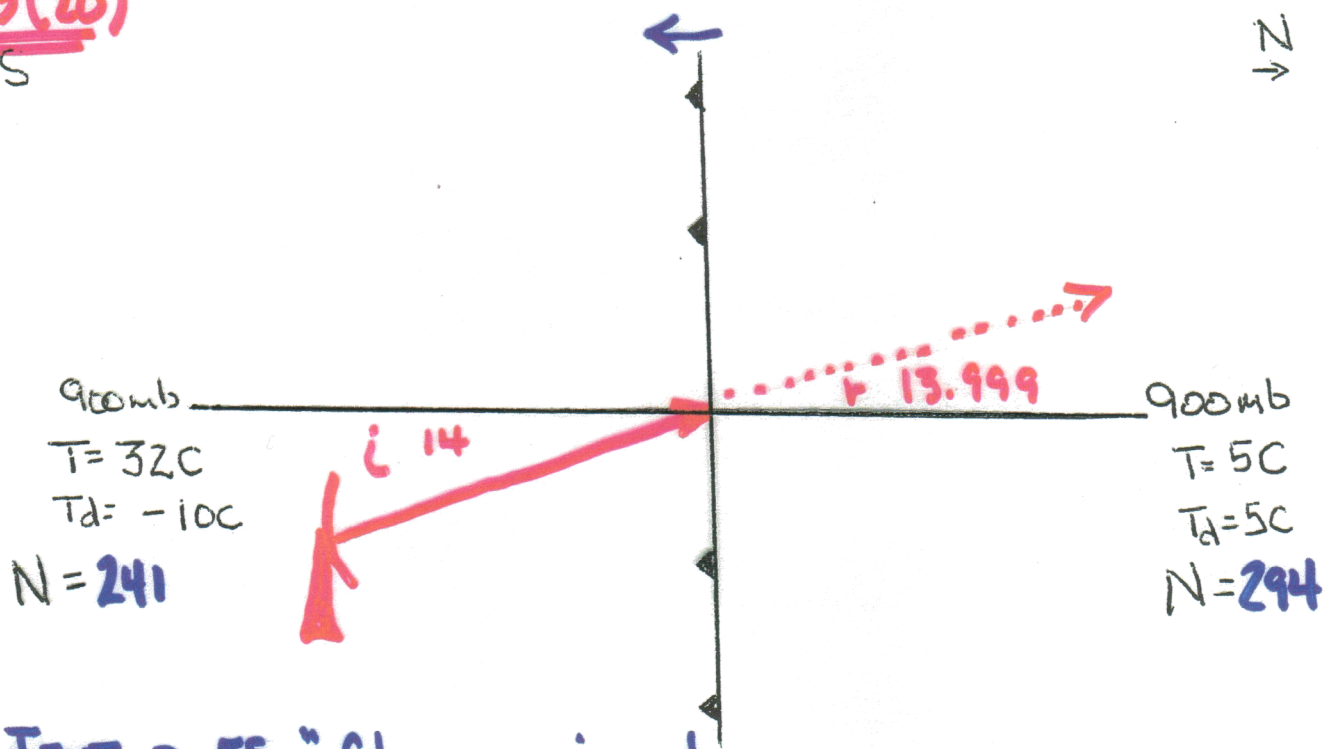


3- BEAM PROPAGATION AND ATMOSPHERIC REFRACTION

a) A VERY STRONG COLD FRONT IS APPROACHING (MOVING AWAY FROM) A WSR88-D RADAR AT 20 m/s. THE RADAR IS OPERATING IN VCP-11. THE CENTER OF ONE OF THE TRANSMITTED BEAMS INTERSECTS THE FRONT AT 900 MB AT ANGLE OF 14 DEGREES RELATIVE TO HORIZONTAL. WHAT IS THE ANGLE OF REFRACTION FOR THE FRONT APPROACHING ~13.999 DEGREES AND FOR THE FRONT MOVING AWAY ~14.001 DEGREES?

12.5(20)
← S

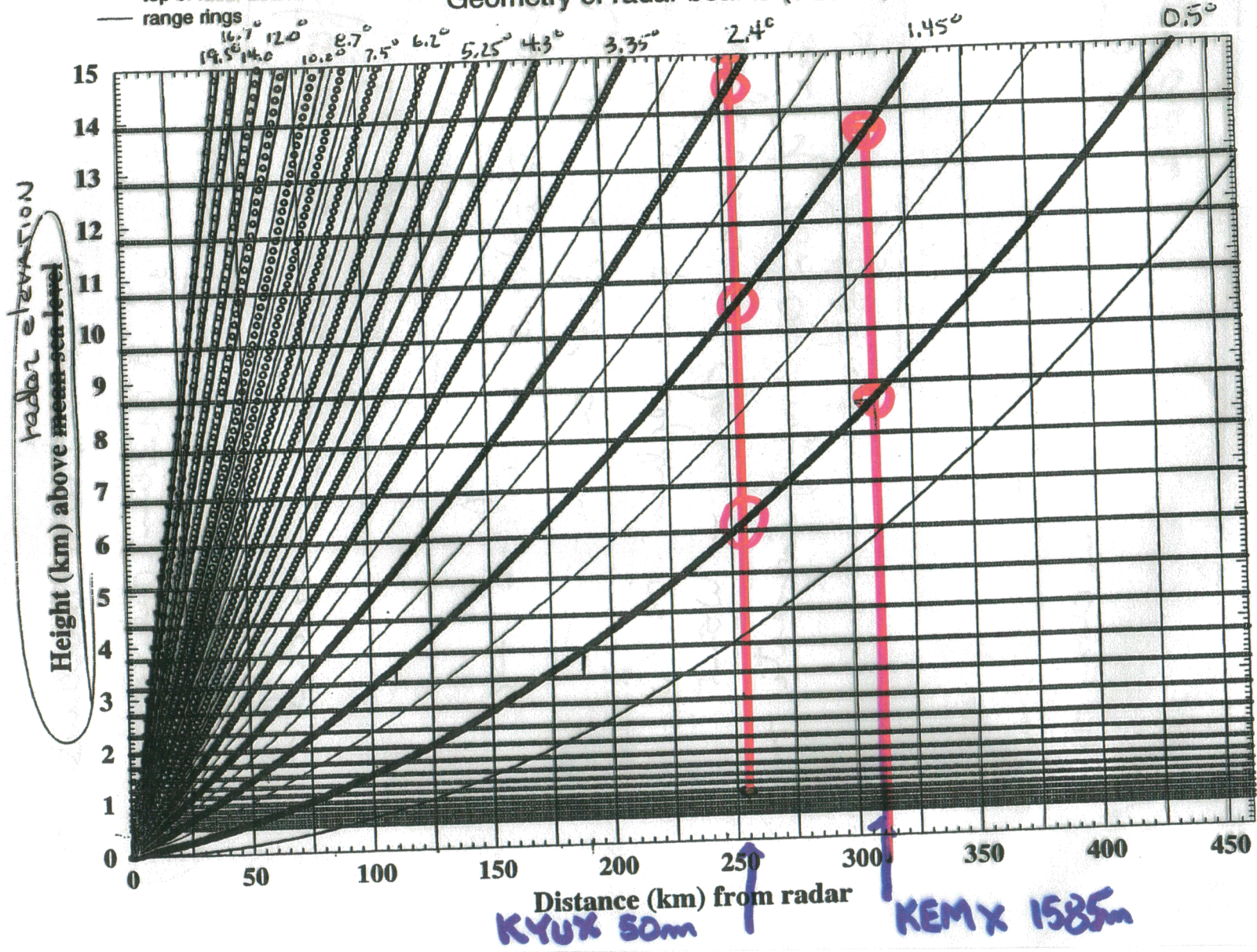


RE: TEXT P. 55 "CHANGES IN REFRACTION ARE USUALLY MUCH STRONGER IN VERTICAL DIRECTIONS THAN IN HORIZONTAL DIRECTIONS."

SKETCH, **IN RED**, ONE OF YOUR ANSWERS ON THE ABOVE DIAGRAM. CONSIDER THE FRONT TO BE A SINGULAR, VERTICAL DISCONTINUITY WITH THERMODYNAMIC CONDITIONS ON EITHER SIDE AS INDICATED ON DIAGRAM

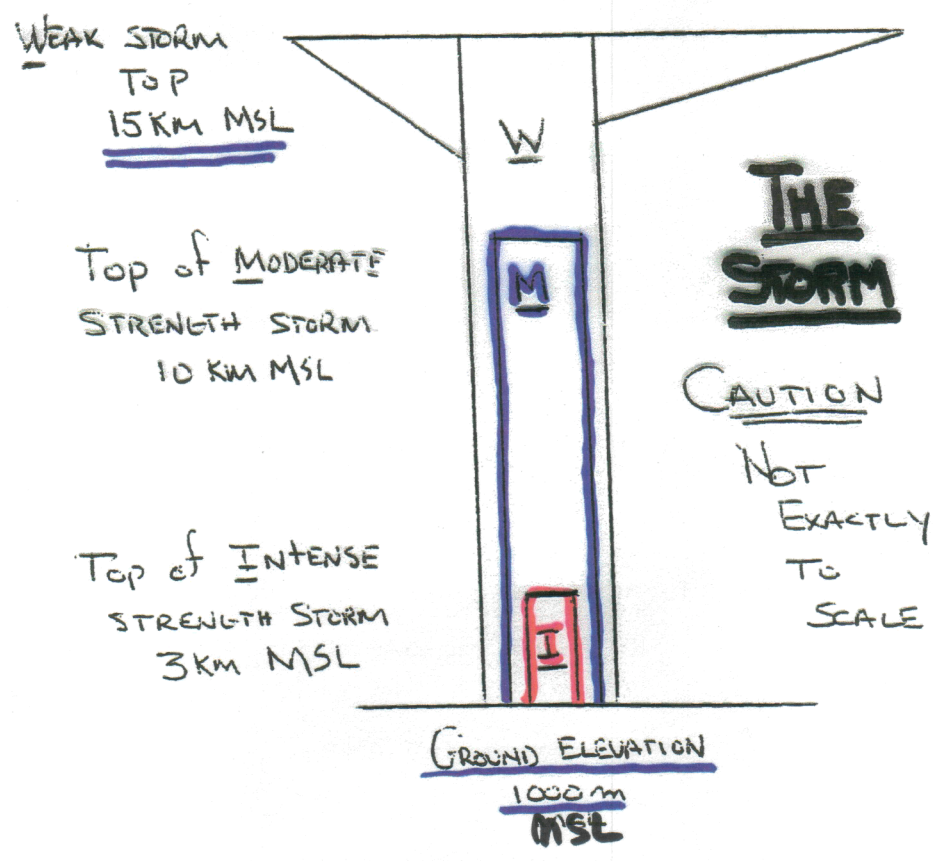
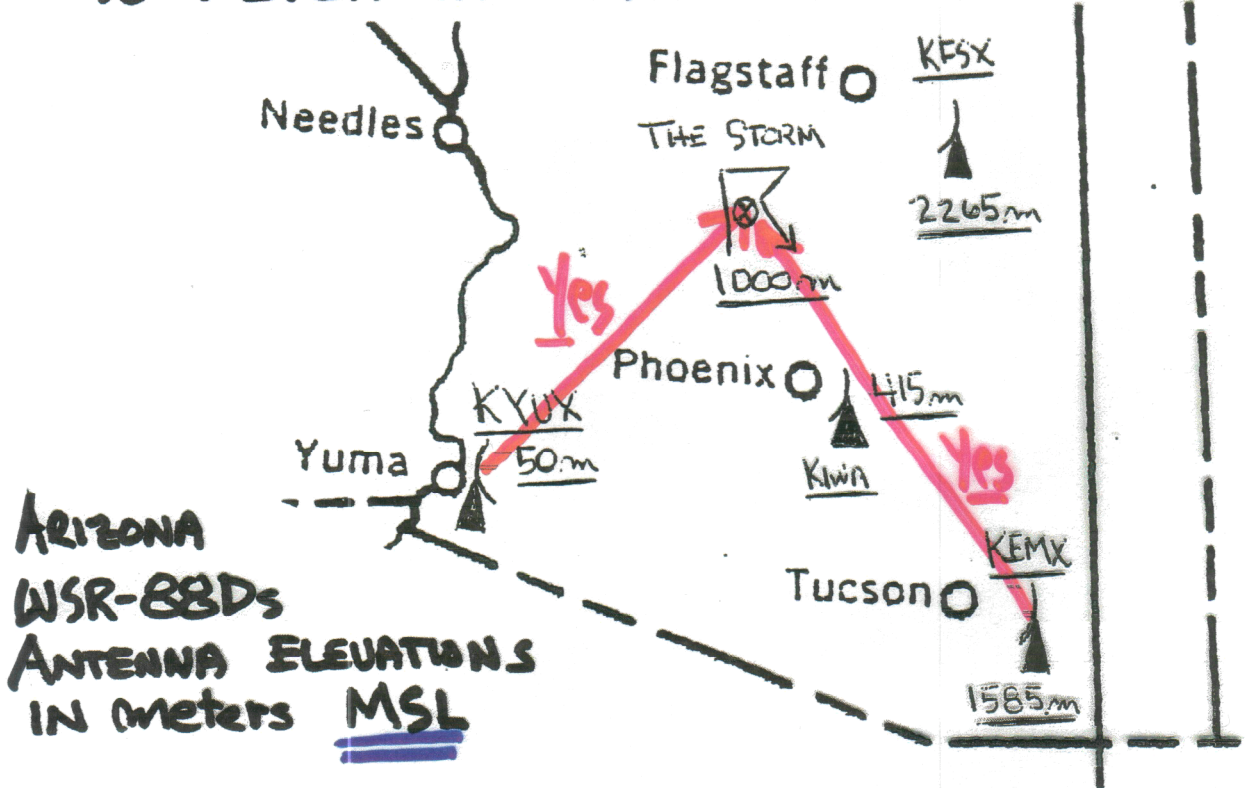
- center of radar bins
- center of grid cells
- bottom of radar beams
- top of radar beams
- range rings

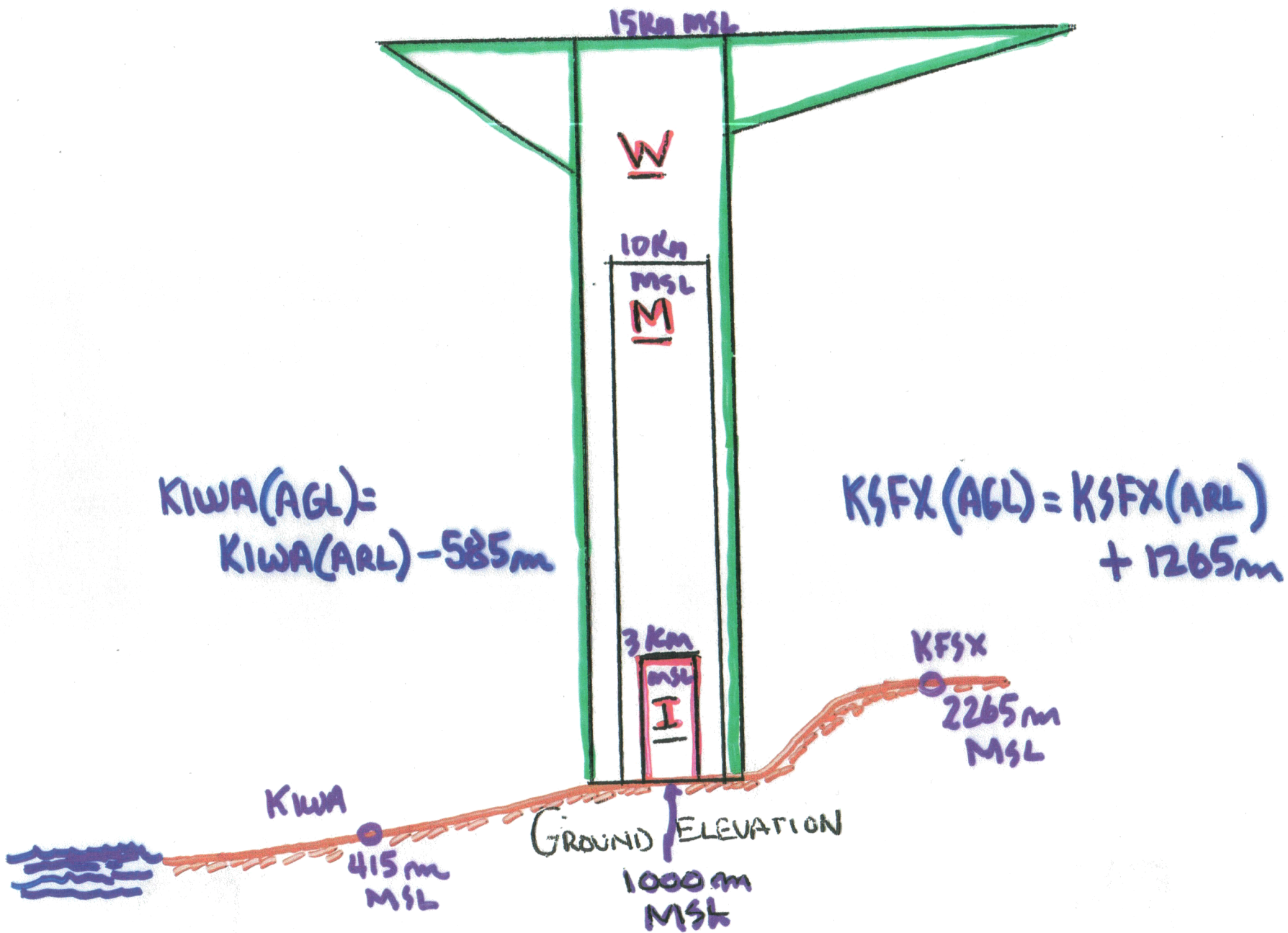
Complete Volume Scan every 5 minutes
 Geometry of radar beams (VCP11)

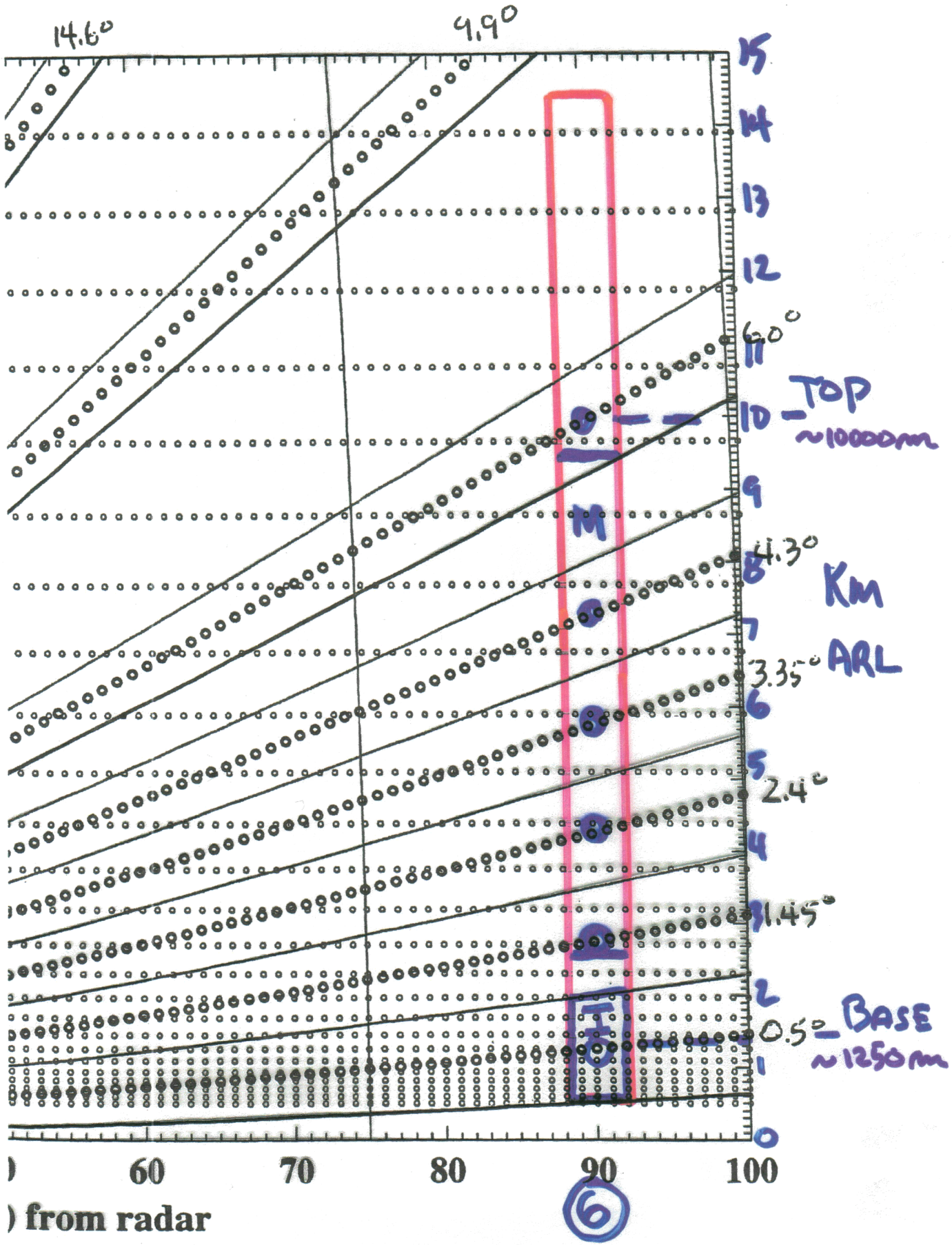


25(40)

USE THIS MAP AND THE STORM DRAWING TO DETERMINE ANSWERS FOR THIS QUESTION.

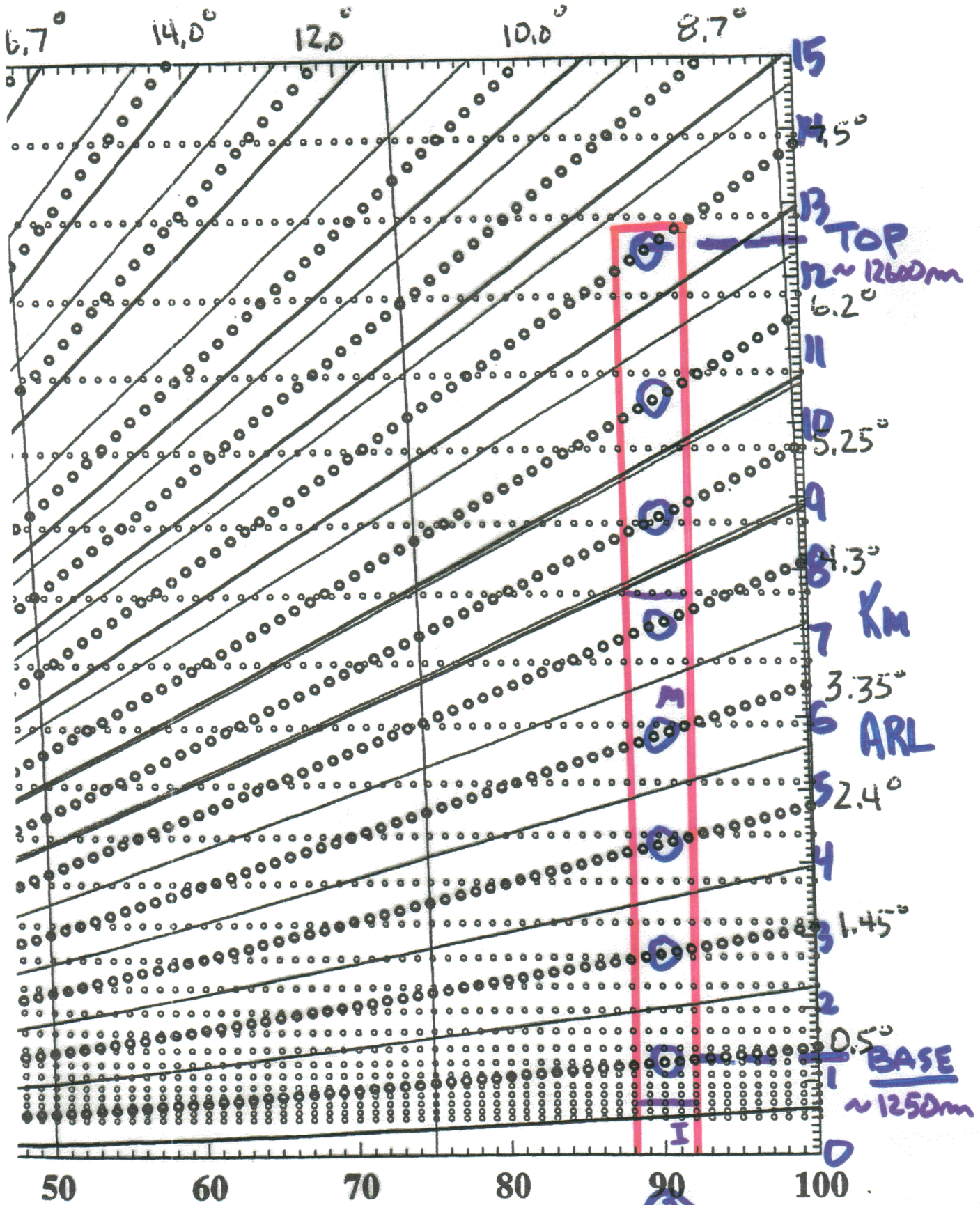






KIWA
VCP-21

$$KIWA(AGL) = KIWA(ARL) - 585m$$



km) from radar

KFSX
VCP-11

$$KBSX(AGL) = KFSX(ARL) + 1265m$$

8