APPENDIX C

TRAIN OVERTAKE DISTANCE CALCULATIONS



Passenger Train Position (Distance): $\frac{ds_1}{dt} = 80$ mph

Freight Train Position (Distance): $\frac{ds_2}{dt} = 50$ mph

 $s_1 = 80t$ $s_2 = 50t + 8$

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Location where Passenger Train is even with the Freight Train ("neck-and-neck"):

$$s_1 = s_2 \implies 80t = 50t + 8 \implies 30t = 8 \implies t = 0.267$$
 hrs
 $80 (0.267) = 21$ miles $= s_1 = s_2$

Location where Passenger Train is 8 miles ahead of the Freight Train:

$$s_1 = s_2 \implies 80t - (50t + 8) = 8 \implies 30t = 16 \implies t = 0.533 \text{ hrs}$$

 $80 (0.533) = 43 \text{ miles} = s_1$
 $50 (0.533) + 8 = 35 \text{ miles} = s_2$

Train Overtake Distance Calculations

DATE

April 2012

FIGURE

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