

iPhone/iPad Top of Descent App Proposal

Specific Range Solutions Ltd.

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iPhone/iPad Top of Descent App Proposal

Opportunity:

- Reduced fuel burn, reduced engine wear and improved safety margins through the use of Continuous Descent Approaches (CDA) based on calculated, aircraft type and configuration-specific Top of Descent (TOD) point.
- Too early descent from cruise means increased throttle setting at low altitude, therefore additional fuel will be burned and engine temperatures will be increased.
- Too late descent from cruise means additional fuel was burned at cruise altitude and aircraft arrives at Initial Approach Way Point (IAWP) with more energy than necessary.



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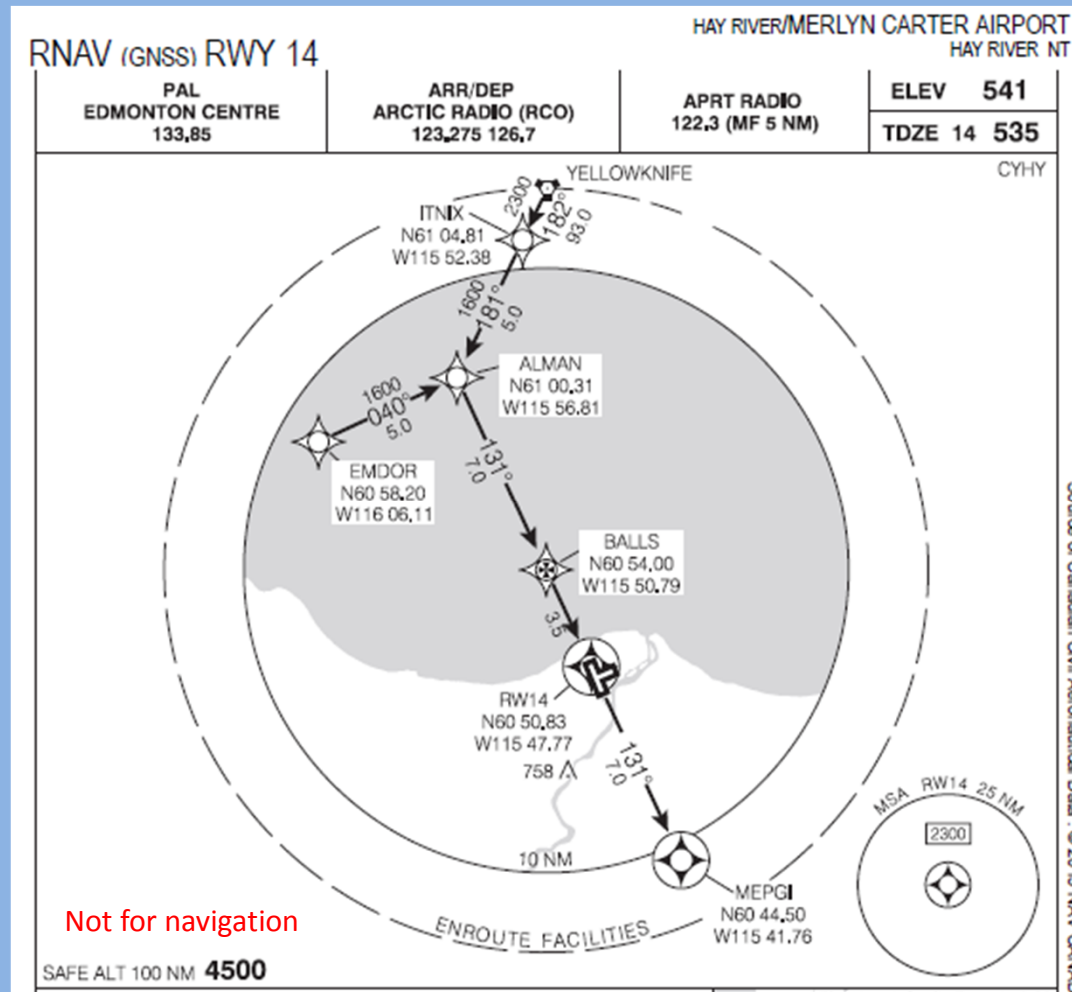
Methodology:

- Intuitive and cost-effective application that assists pilot decision making in the cockpit during the low workload cruise flight phase.
- Use of reliable and cost-effective consumer electronic devices with internal or external GPS receiver e.g. iPhone or iPad mini with external Dual XGPS150A GPS receiver.
- Employs acquired GPS data (5 parameters) and a minimum of pilot input data (9 parameters).
- Proprietary and accurate algorithm that continuously calculates distance and time remaining to optimized Top of Descent point.
- Accurate wind profile as a function of altitude key to precisely calculating Top of Descent point.
- Human factors design approach to ensure efficient user experience and minimum head down time.
- Application must fit within the existing operational environment, not the other way around.



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Example: Approach to Hay River (CYHY RNAV RWY 14) from northeast with a Beechcraft 1900D aircraft. Approach plate per Nav Canada CAP 1.



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Beech 1900D Top of Descent Calculator

Calculated GPS Data	Input Aircraft Data
Latitude (deg.)	Air Speed (KIAS)
Longitude (deg.)	Heading (deg. mag.)
Ground Speed (kts)	Altitude (ft)
Heading (deg. true)	OAT (deg. C)
Altitude (ft)	Descent Speed
Input Airport + IAWP Data	Calculated Wind Data/TOD
Arrival Airport	Wind Direction (deg. true)
IAWP	Wind Speed (kts)
Wind Direction (deg. mag.)	Remaining Distance (NM)
Wind Speed (kts)	Remaining Time (mm:ss)



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Beech 1900D Top of Descent Calculator

Calculated GPS Data	Input Aircraft Data
61 deg. 42.747' N	Air Speed (KIAS)
115 deg. 11.408' W	Heading (deg. mag.)
247 kts	Altitude (ft)
207 deg. true	OAT (deg. C)
19,510 ft	Descent Speed
Input Airport + IAWP Data	Calculated Wind Data/TOD
Hay River (CYHY)	Wind Direction (deg. true)
Hay River (CYHY)	Wind Speed (kts)
Yellowknife (CYZF)	Remaining Distance (NM)
Wind Direction (deg. true)	Remaining Time (mm:ss)
Wind Speed (kts)	

Beech 1900D Top of Descent Calculator

Calculated GPS Data	Input Aircraft Data
61 deg. 42.747' N	Air Speed (KIAS)
115 deg. 11.408' W	Heading (deg. mag.)
247 kts	Altitude (ft)
207 deg. true	OAT (deg. C)
19,510 ft	Descent Speed
Input Airport + IAWP Data	Calculated Wind Data/TOD
Hay River (CYHY)	Wind Direction (deg. true)
ITNIX (2,300 ft)	Wind Speed (kts)
ITNIX (2,300 ft)	Remaining Distance (NM)
EMDOR (2,300 ft)	Remaining Time (mm:ss)
Wind Speed (kts)	



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Beech 1900D Top of Descent Calculator

Calculated GPS Data	Input Aircraft Data
61 deg. 42.747' N	196 KIAS
115 deg. 11.408' W	182 deg. mag.
247 kts	20,000 ft
207 deg. true	-35 C
19,510 ft	200 KIAS (1,500 fpm) ▼
	200 KIAS (1,500 fpm)
	248 KIAS/Mmo (1,500 fpm)
Input Airport + IAWP Data	Calculated Wind Data/TOD
Hay River (CYHY) ▼	Wind Direction (deg. true)
ITNIX (2,300 ft) ▼	Wind Speed (kts)
180 deg. mag.	Distance Remaining (NM)
9 kts	Time Remaining (mm.ss)

Beech 1900D Top of Descent Calculator

Calculated GPS Data	Input Aircraft Data
61 deg. 42.747' N	196 KIAS
115 deg. 11.408' W	182 deg. mag.
247 kts	20,000 ft
207 deg. true	-35 C
19,510 ft	200 KIAS (1,500 fpm) ▼
	200 KIAS (1,500 fpm)
	248 KIAS/Mmo (1,500 fpm)
Input Airport + IAWP Data	Calculated Wind Data/TOD
Hay River (CYHY) ▼	170 deg. true
ITNIX (2,300 ft) ▼	20 kts
180 deg. mag.	0.3 NM
9 kts	00 min. 04 sec.



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Summary:

- Accurate, simple and cost-effective approach to reduce fuel burn and engine wear, as well as safely manage energy in descent.
- 1% of fuel savings per leg estimated.
- Maximum use of available GPS data and minimum use of pilot input data.
- Top of Descent point is calculated in cruise, crew can better anticipate descent and approach phases, and then fully monitor descent.
- What are the potential cost savings for your company by optimizing Top of Descent in daily flight operations?



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