CANADUS

SURE+START SOLUTION

SOLAR CHARGING | BATTERY RECONDITIONING | MONITORING

- ENSURE MISSION READINESS
- EXTEND BATTERY LIFE 5X+
- ROI AFTER ONE YEAR

BACKGROUND

- In 2016, the US DoD spent >$80 million on lead-acid battery replacements for wheeled vehicles (373,000 batteries). Many of these batteries fail from not being started and charged.
- In 2019 CPS began working with Army Futures Command which had identified the causes and best practices for this occurrence in a 2018 report for the US Army.
- Based on these findings, the CPS Sure + Start Battery Solution was developed to solve the problem of undercharged batteries and maintain mission readiness of DoD's fleets.
- Recently, Sure + Start has been demonstrated at the US Army Reserve Center in Twinsburg, OH, Fort Bragg, NC and Florida National Guard.

SURE + START DEMONSTRATIONS

- Evaluate the condition of Army Fleet batteries for HMMWV, FMTV, HEMITT, JLTV and Generators
- Equip vehicles with CPS Sure + Start which includes:
  - Flexible solar panel (size specific)
  - Custom Charge controller
  - Back panel junction box
  - Battery Reconditioner
- Collect and analyze data
- 100% Success

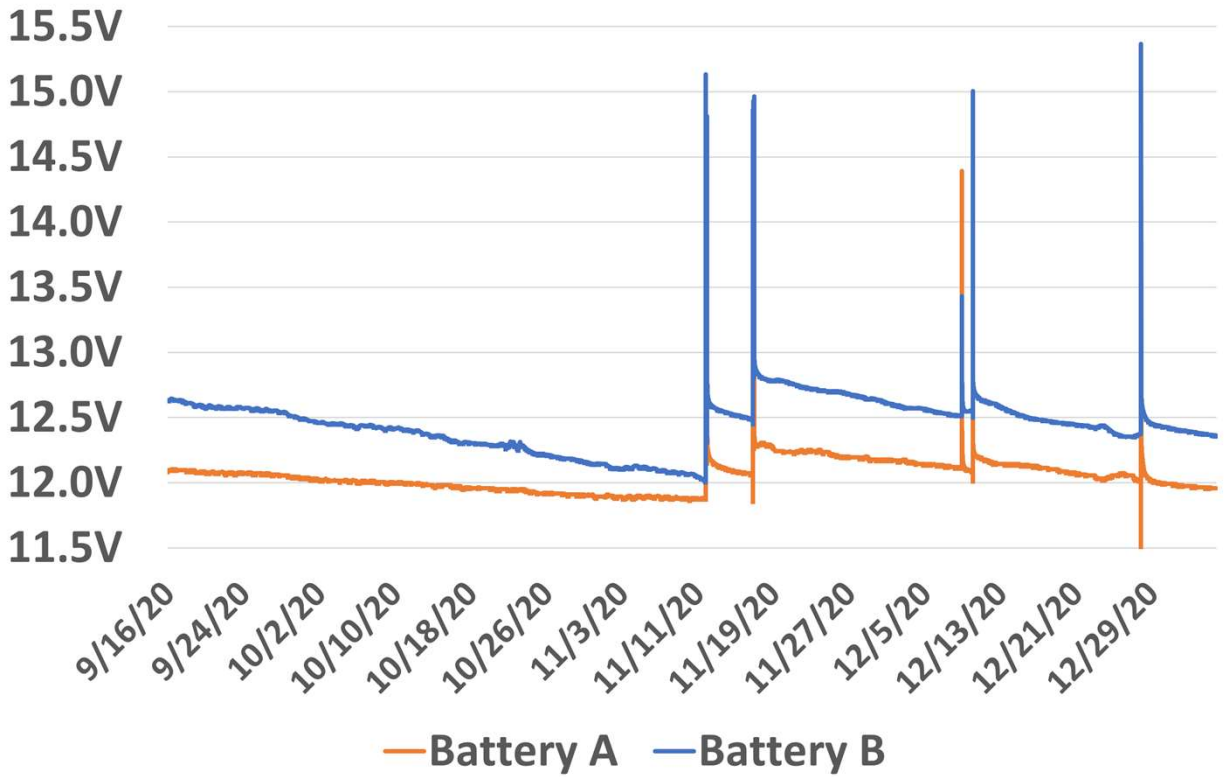
TWINSBURG HMMWV FLEET BATTERY MEASUREMENTS SHOW THAT ALMOST EVERY VEHICLE IS CHRONICALLY UNDERCHARGED

Truck #	Bat Type	Rear Bat OCV	Front Bat OVC
HHD-5	Flooded	12.44	12.33
POG 301	Flooded	5.40	12.64
POG 350	Hawker AGM	4.68	5.01
POG 306	Hawker AGM	12.08	12.81
POG 305	Flooded	11.94	12.14
POG 302	Hawker AGM	12.33	12.73
*POG 601	Flooded	11.78	12.26
*POG 602	Flooded	11.91	12.10
*POG 304	Flooded	11.78	12.38
FST 8	Hawker AGM	6.03	12.54
HHC 07	Flooded	11.53	12.45
HQ 11	Flooded	12.22	12.14
FST10	Flooded	12.43	12.67
HQ 6	Flooded	11.62	12.40
HQ 4	Flooded	12.11	12.13
HQ 2	Flooded	12.55	12.59
NO ID	Flooded	11.44	9.86
HHC 9	Flooded	12.54	12.53
HQ 2	Flooded	12.55	12.59
NO ID	Flooded	11.44	9.86
HHC 9	Flooded	12.54	12.53

* CPS Sure + Start test vehicles

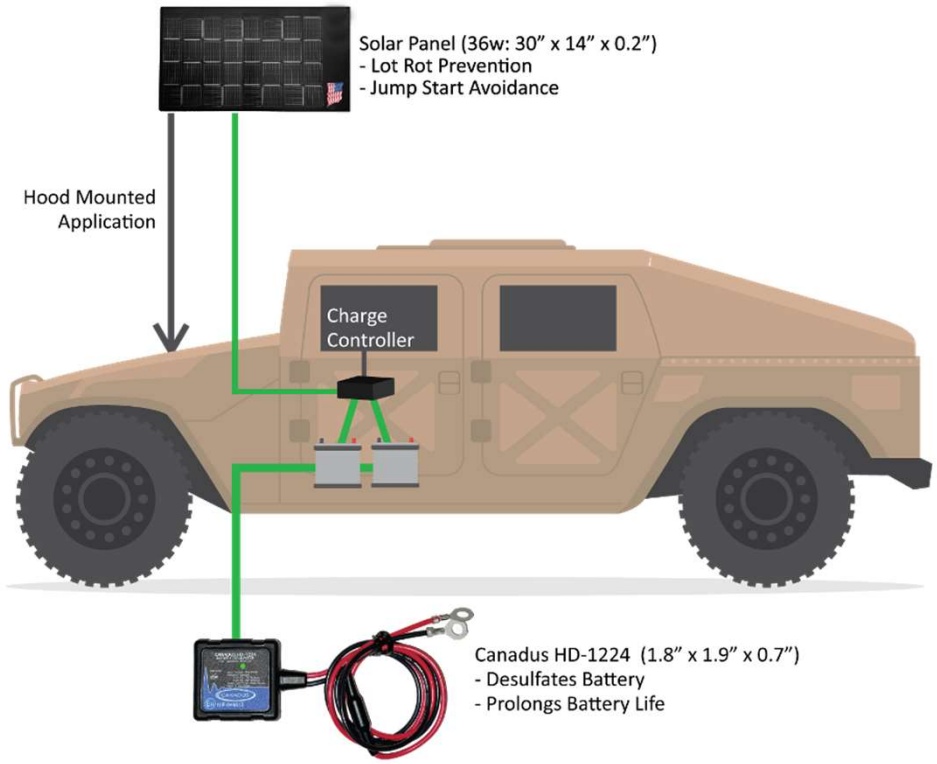
HMMWV CONTROL VEHICLE

- This is the state of the fleet without Sure+Start.
- Batteries are in a constant state of discharge/decline.
- Without the Sure+Start system these batteries are typically lasting 12-13 months



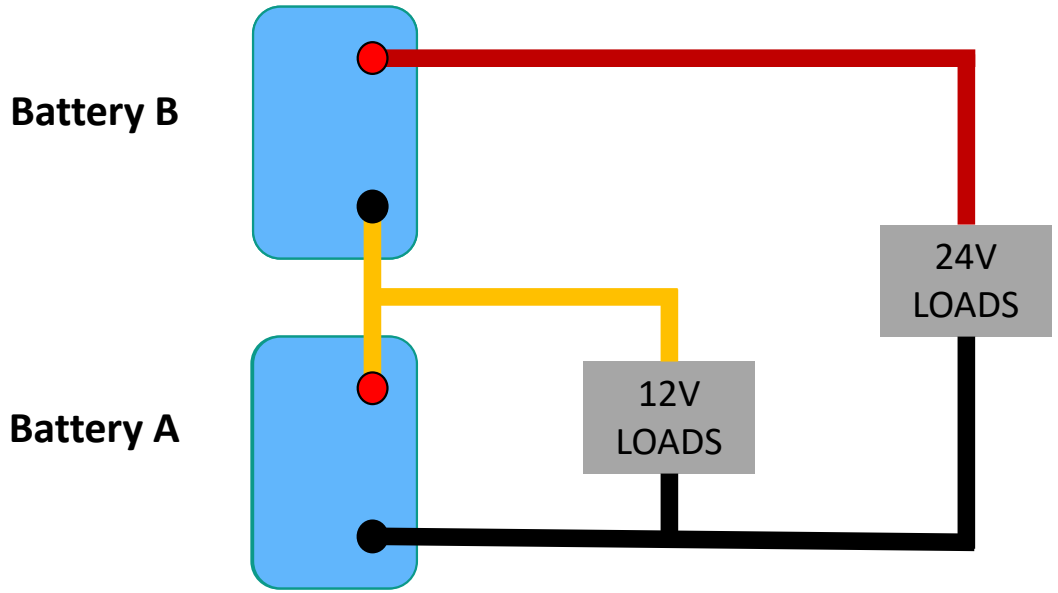
THE CPS SURE + START BATTERY SOLUTION EXPLAINED:

- Provides a charge to the batteries while the vehicle is not running or connected to shoreline power
- Balance the state of charge between the 12 and 24 Volt battery stack
- Prevents and eliminates sulfation build-up on battery plates using CPS Reconditioning technology
- Keeps your fleet ready to roll by maintaining the batteries in a peak state
- Increases mission readiness by reducing maintenance personnel manhours, lead-acid battery consumption, and no-start occurrences for mission essential vehicles and equipment.



THE PROBLEM WITH A SPLIT VOLTAGE ELECTRICAL SYSTEM

- **Split voltage electrical systems, like in many military vehicles, are known to have problems with unbalanced battery packs, leading to premature battery failure.**
- **The CPS Sure + Start charges each battery independently, equalizing the voltages of the system.**
- **The data shows continuous improvement in the balancing of the battery pack.**



OPEN CIRCUIT VOLTAGES
BY DAY 21 SOLAR HAS FULLY CHARGED BATTERIES

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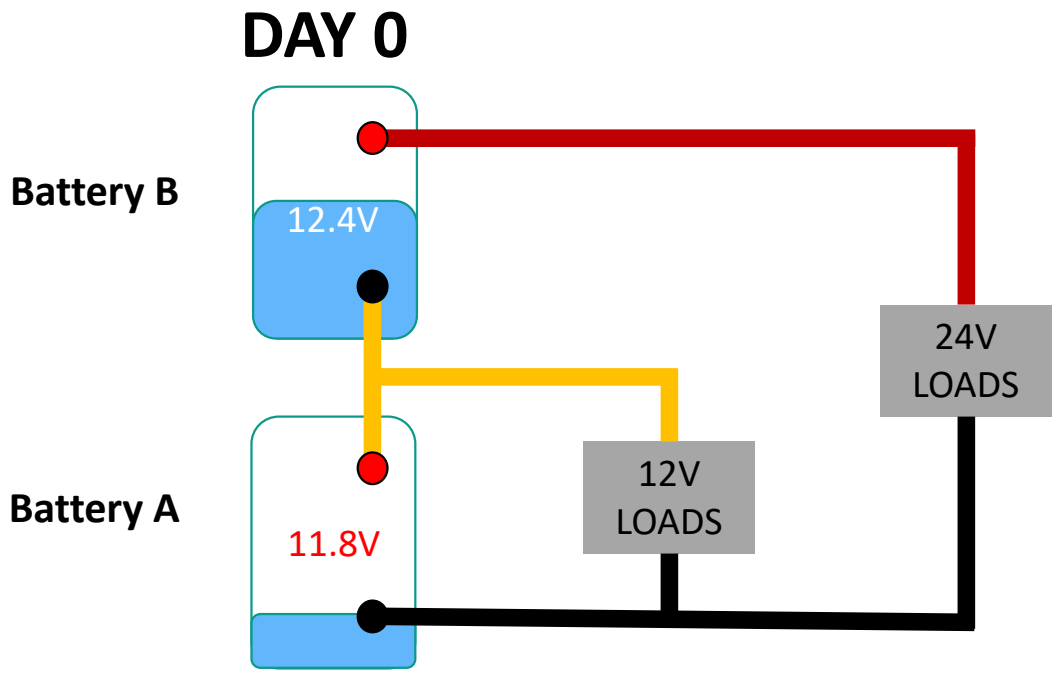

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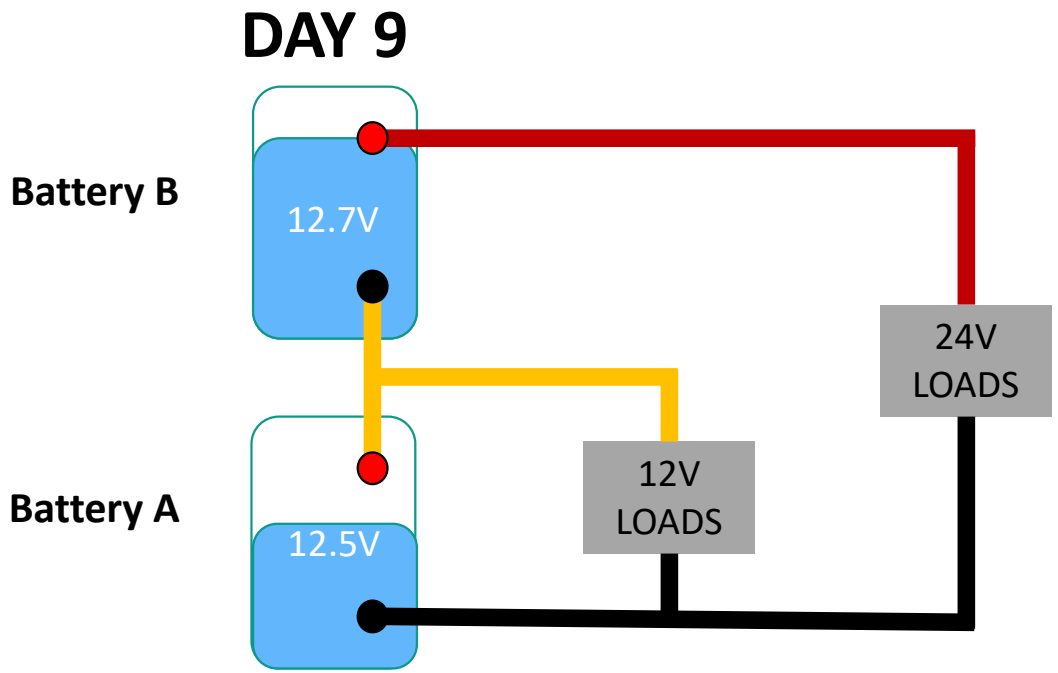

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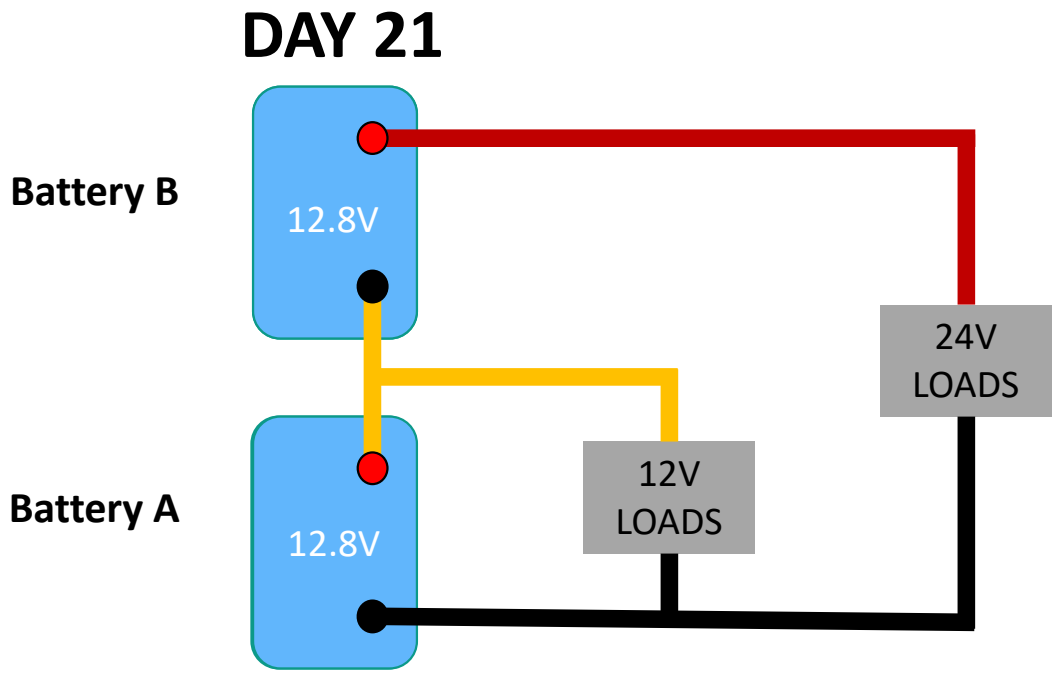
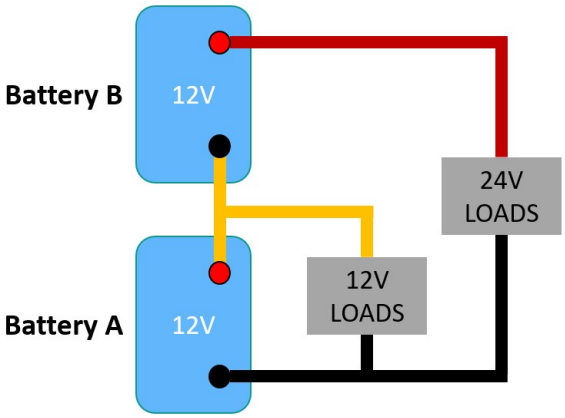
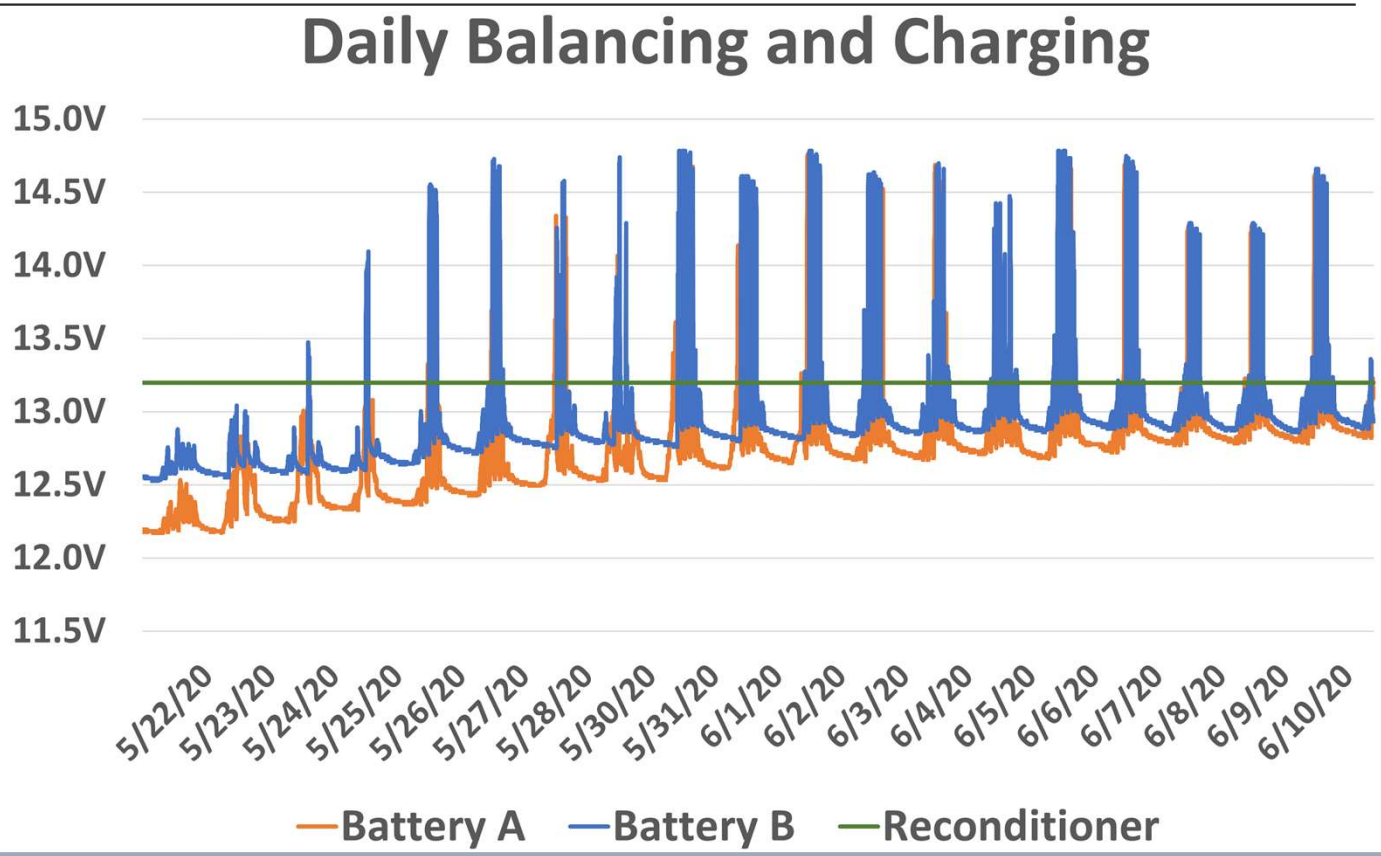


12V AND 24V DAILY CHARGE CYCLE RECONDITIONING AND EQUALIZING

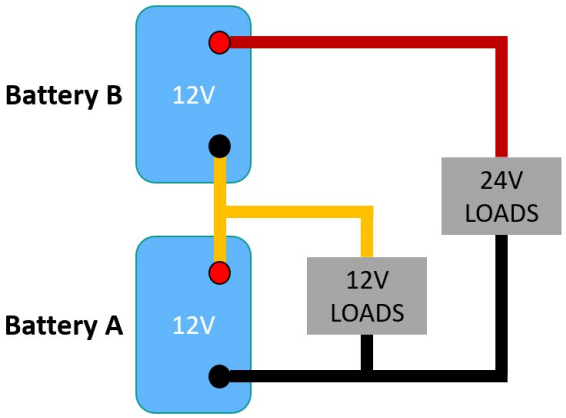
Battery Reconditioner activated at 13.2V

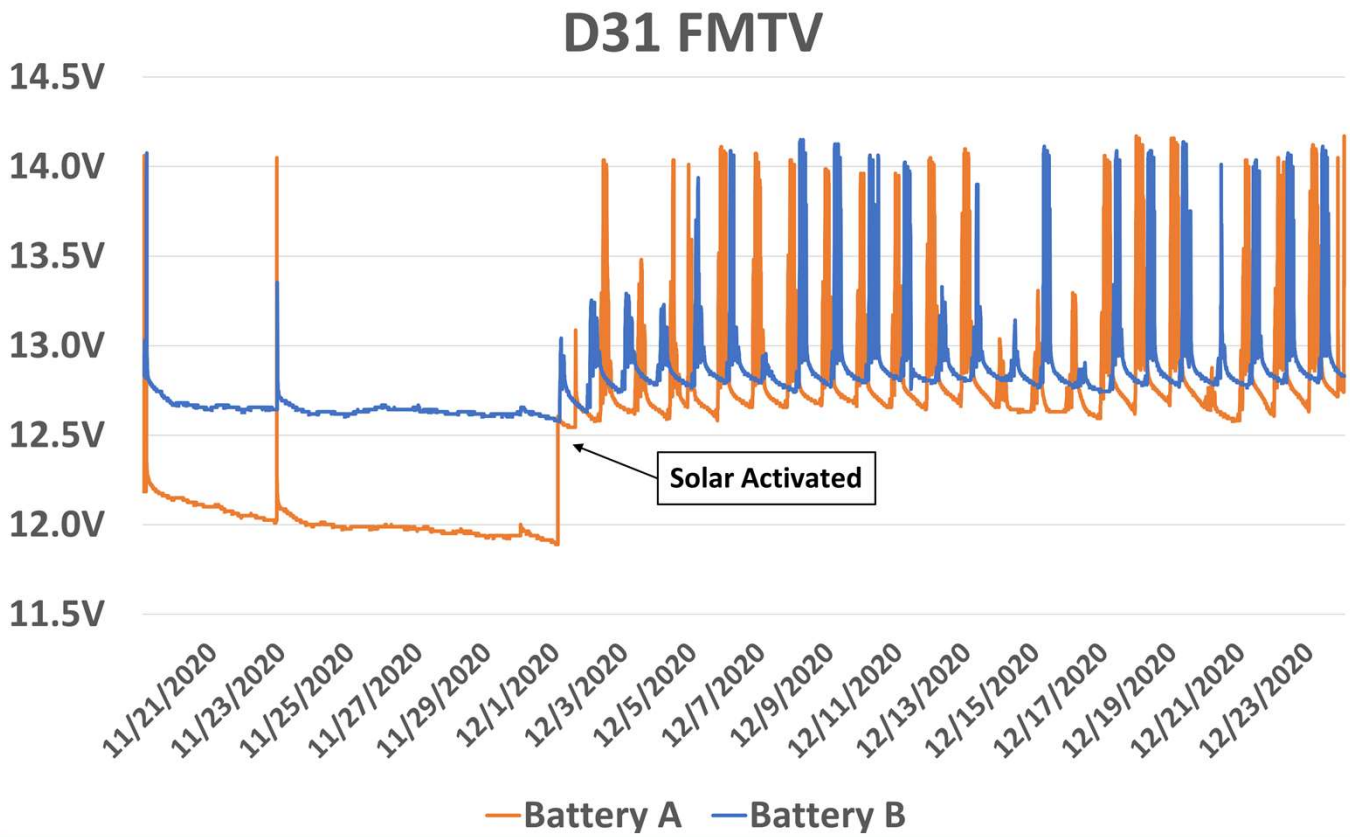




12V AND 24V DAILY CHARGE CYCLE RECONDITIONING AND EQUALIZING

Ft. Brag Installation





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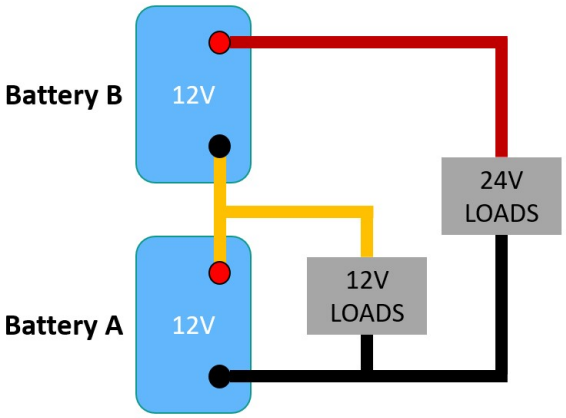
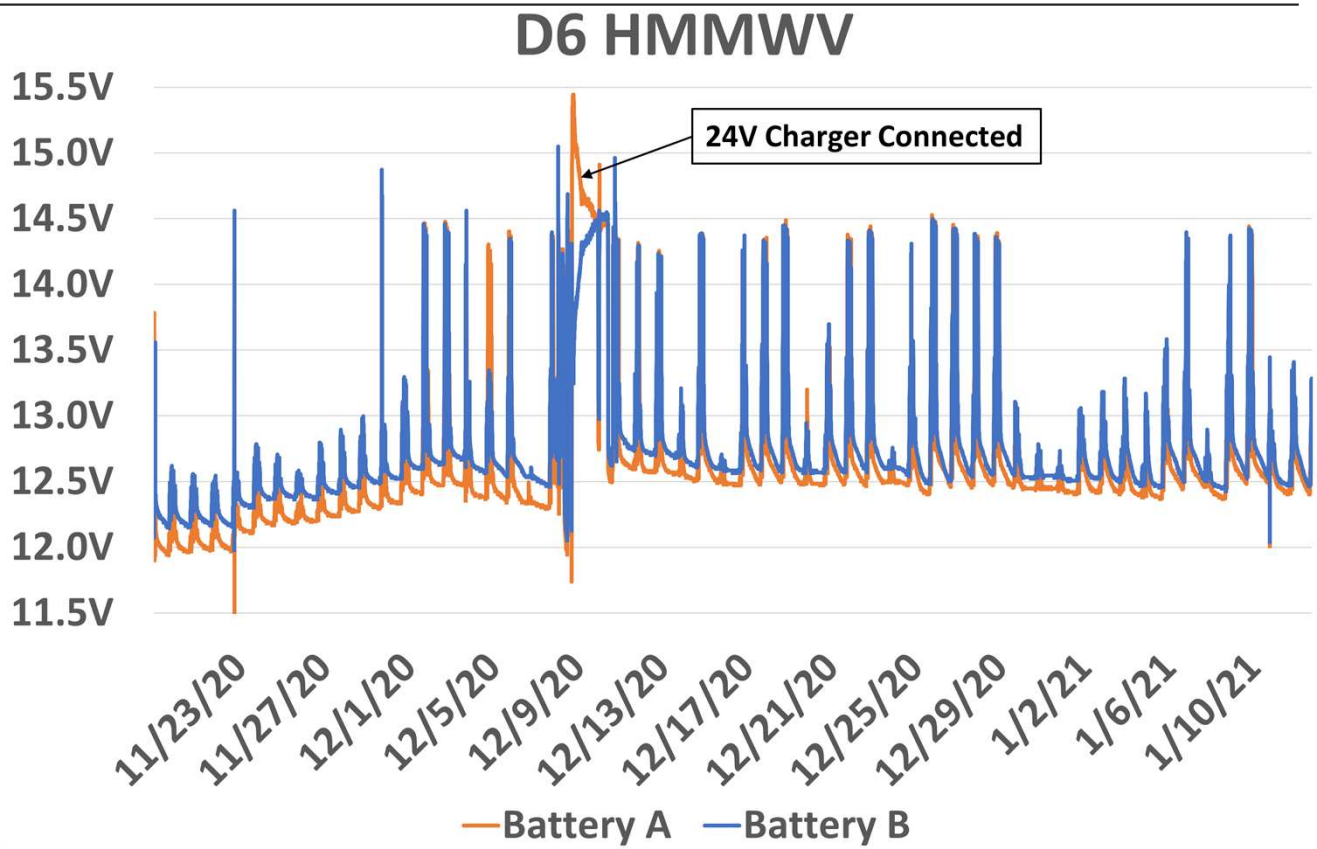




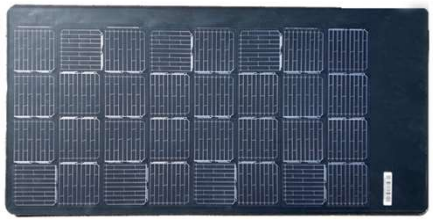
BEST AVAILABLE TECHNOLOGY

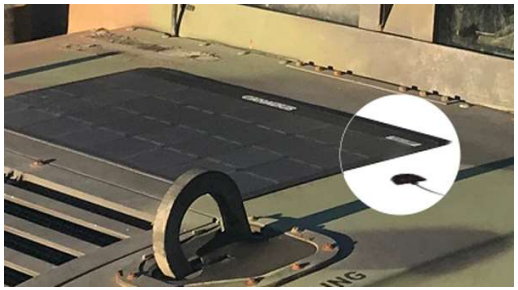
- Solar Panel Design
  - High efficiency, 2.5x Power Density compared to Thin-Film
  - Flexible, Rugged, Lightweight, mono cSi PV modules
  - Peal and stick modules easy to install

- Flat mounting, back side junction box
  - Unique junction box hidden under the panel surface to protect connection from physical contact and weather

- Charge controller custom to battery pack
  - Designed for 12v , 24v or 12 + 24V vehicles

- Battery Reconditioner
  - Eliminates lead sulfate build up to make batteries last longer





SUMMARY

- The installation of a CPS Sure + Start Battery Solution provides enough energy to fully charge the battery pack within 21 days.
- The battery controller equalized the 12v and 24v systems
- The Battery Reconditioner was activated each charging cycle at 13.2 volts to clean battery plates of sulfation, optimizing battery capacity
- In total, the CPS Sure + Start can keep idle military vehicles charged and ready for deployment, while significantly lowering battery replacement expenses
- For more detailed info on our products or technology, visit us at Canadus.com

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THANK YOU