**Wyoming CV Pilot**

**Log File Design Elements**

Logs:

Logs will be kept under 100kb in size

Time will be UTC in ISO format (2017-06-30T19:53:00:000)

Each log file will have a file name with integrated time/date stamp (time of log file creation), IPv6 OBU address and type of log (type\_millisecondsUTC\_IPv6address.csv.gzip)

Type will be Driver\_Alert, BSM\_30Second, BSM\_Event, Received\_Message, Environmental, DNM, RSU\_BSM

ODE will need to parse and retain data from the log file name and additional fields within log (like time from BSM)

Each log file will be zipped (gzip) and encrypted with the ODE public key (ODE using SSH key not SCMS)

Time for log files will be in UTC in 1 milliseconds from UNIX epoch (this time will be from the logging OBU system time sync’ed to GPS, so not from the 1609.2 header based approach from the generating system security header)

All TIMs and BSMs that are logged need to have signatures validated and the log file needs to note if the validations passed or failed (for RSUs and OBUs).

Logs deleted if over 7 days old

Logs purge order defined below for automated purging by OBU firmware to protect storage

Logs deleted with sent to ODE

Logs retained through reboots

OBU Logs:

1. We have a log for driver’s alerts, it will need to flag alerts that were not given because of a higher priority alert (purge ninth)
   1. Location, time, alert (FCW, TIM, not DNM)
2. BSM once every 30 seconds (purge second)
   1. Add time to each record for all BSMs (from 1609.2 header)
3. BSMs for event (10 seconds before, event, 10 seconds after all at 10 Hz) (purge first)
   1. Driver alert
   2. Received BSMs from remote vehicle(s), also record host vehicle BSMs
   3. If event is longer than 1-minute drop to 1 Hz for host and remove vehicles
   4. Add time to each record for all BSMs (from 1609.2 header)
4. Received messages (purge third)
   1. TIMs from RSU and Satellite, message, location, method of reception (Sat/RSU) and time, only log messages within 20-mile radius and only log first time message is received
5. Environmental Log (purge seventh)
   1. Location, time, environmental log
   2. Second priority for sending this log
6. DNM (purge eight)
   1. Location, time, DNM (log first unique DNM for Distressed vehicle and for each relay/received vehicle)
   2. Top priority for sending this log
7. OBU upgrades (purge fourth)
   1. Log success/fail of firmware updates
   2. Log availability of firmware updates
8. SCMS (purge fifth)
   1. Log connections to SCMS
9. System log (very PII sensitive, just for internal use and will have to be locked down and encrypted, may want to exclude collection of this once the pilot is working well) (purge sixth)
   1. Boot and shutdown location/time
   2. Application errors and re-starts
   3. OBU unique identifier

RSU Logs:

1. All received BSMs
   1. Add time to each record for all BSMs (from 1609.2 header)
2. SCMS
   1. Log connections to SCMS
3. System log
   1. Boot and shutdown location/time
   2. Application errors and re-starts
4. Received TIMs from ODE (and SiriusXM)
5. No DNM logging as these will go straight from the OBU to the ODE.

HMI Logs:

1. Driver alerts log
   1. Location, time, alert
2. Application start/stop and crashes log
   1. Location and time
3. DNM log
   1. Location, time, method of initiation
   2. Location, time, method of dismissal
4. Environmental log
   1. Application errors