

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM

CHP 558D (Rev. 9-08) OPI 065 (MAIT use only)

DATE OF COLLISION (MONTH-DAY-YEAR)	TIME (2400)	NCIC	OFFICER I.D.	NUMBER	MAIT CASE NUMBER	PAGE
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BL-008-16

California Highway Patrol
Oceanside Area

MAIT SUPPLEMENTAL

This investigation was conducted by the California Highway Patrol (CHP) Border Division Multidisciplinary Accident Investigation Team (MAIT).



MAIT PERSONNEL

Sergeant C. Buono, ID [REDACTED], Border Division MAIT Team Leader
Officer J. Isbister, ID [REDACTED], Border Division MAIT Investigator
Officer J. Snider, ID [REDACTED], Border Division MAIT Investigator
Officer S. Parent, ID [REDACTED], Border Division MAIT Investigator*
Officer I. Vazquez, ID [REDACTED], Border Division Associate MAIT Investigator
Caltrans Senior Transportation Engineer D. Tran, Border Division MAIT
Motor Carrier Specialist I (MCS I) T. Carlson, ID [REDACTED], Border Division MAIT

*Denotes primary investigator

SUBPOENAS FOR MAIT PERSONNEL SHOULD BE DIRECTED TO:

California Highway Patrol
Border Division Special Services Command – MAIT
9330 Farnham Street
San Diego, California 92123
Attention: Sergeant C. Buono

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FACTS – INTRODUCTION

MAIT Notification

On Saturday, April 2, 2016, at 0955 hours, CHP Border Division Special Services Acting Commander, Lieutenant T. Eglin, ID [REDACTED], notified Sergeant Buono of a request for MAIT assistance from the CHP Oceanside Area with the investigation of a fatal-injury collision. The collision occurred at 0910 hours on the same day and involved an airplane which collided with a vehicle that was parked on the right shoulder of Interstate 15 northbound, north of the Pala Mesa Drive overcrossing. The collision scene was located within an unincorporated area of San Diego County. The following airplane, vehicle, and occupants were involved in this collision:

- 2000 Nokes-Matthews Lancair IV-P (Lancair) airplane piloted by Dennis Hogge and occupied by Celeste Hogge (right-front seat).
- 2015 Nissan Sentra, driven by Aaron McCann and occupied by Jason Soule (right-front seat), Emily Boesmiller-Hoch (left-rear seat), and Antoinette Isabelle (right-rear seat).

As a result of the collision, Ms. Isabelle sustained fatal injuries and all other parties sustained injuries ranging from visible to severe.

Scope of Investigation

The scope of this MAIT investigation was limited to the following investigative responsibilities:

- Collision scene and physical evidence documentation
- General roadway description
- Physical evidence description and analysis
- Imaging and analysis of the airbag control module installed in the Nissan
- Area of impact analysis

Throughout this report, unless otherwise indicated, all times, speeds, and measurements are approximate, and date references are for the year 2016. Vehicle-based direction references are oriented from the driver's seat looking forward.

Investigation Overview

Saturday, April 2

Following notification of the request for MAIT assistance, Sergeant Buono, Investigators Isbister, Snider, and Vazquez, Engineer Tran, and MCS I Carlson responded to the collision scene and began arriving at 1120 hours. While at the scene, the conditions and locations of physical evidence items, involved vehicle and airplane, and characteristics of the environment were documented in digital images and measurements.

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FACTS – INTRODUCTION

Investigation Overview

Tuesday, April 5

At 1219 hours, with signed consent from both Mr. McCann (driver) and Ms. Patricia Kelly, a representative of EAN Holdings LLC (registered owner), Investigator Isbister imaged the data recorded on the airbag control module installed in the Nissan while the vehicle was impounded as evidence at S&R Towing [REDACTED], Oceanside], per California Vehicle Code Section 22655.5.

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FACTS – ROADWAY DESCRIPTION

General Description

The Lancair impacted Interstate 15 northbound at the approximate coordinates: Latitude 33°20'49.22560" N (33.34701°) and Longitude 117°09'31.56567" W (–117.15877°), north of the Pala Mesa Drive overcrossing (Figure 1).

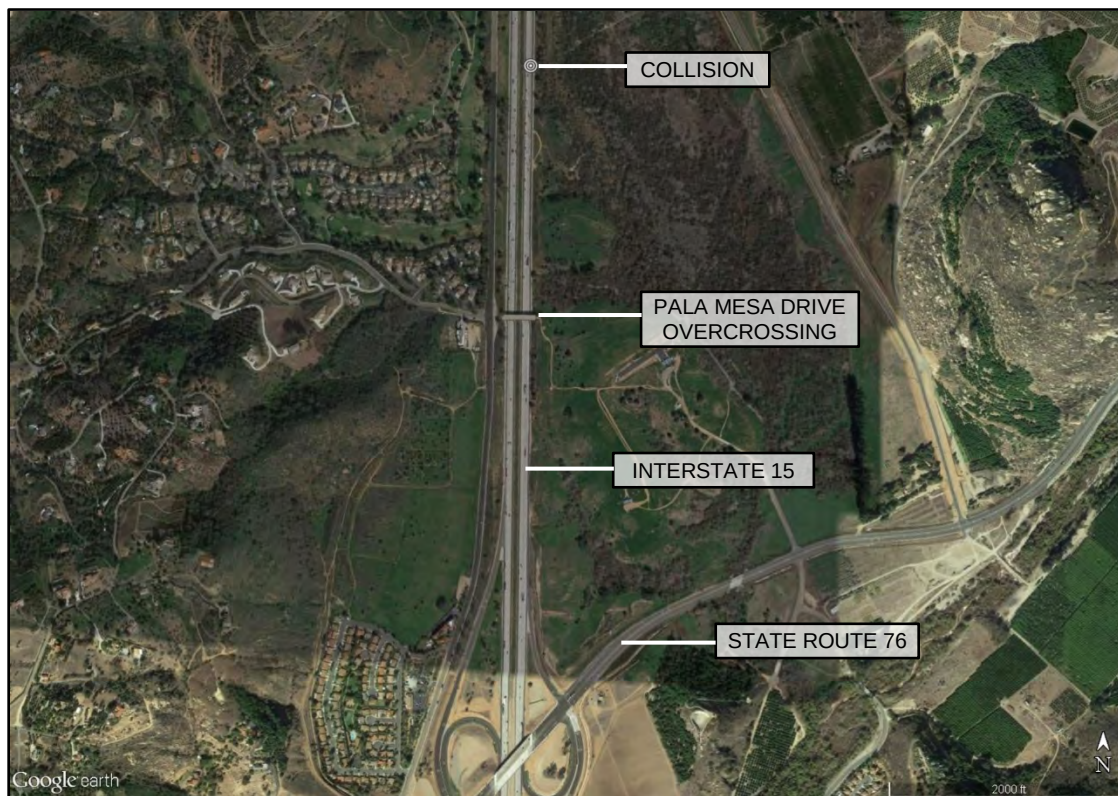


Figure 1. Aerial view of Interstate 15 in the vicinity of the collision. Source: Google Earth. 33.34701° and –117.15877°. February 9, 2016. [Cited: April 20, 2016].

In this Roadway Description section, the “right shoulder” is defined as the section of the asphalt concrete pavement located between the painted white edgeline and the asphalt concrete dike. The “left shoulder” is defined as the section of the asphalt concrete pavement located between the painted yellow edgeline and vegetation-covered median.

Interstate 15 in the vicinity of the collision, was a designated north/south state of California maintained freeway located in an unincorporated area of San Diego County. Approaching the collision scene on Interstate 15 northbound, the roadway was generally flat with a slightly ascending grade of less than 0.5 percent.

The roadway, which consisted of four lanes, was constructed of portland cement concrete. The traffic lanes were separated by 4-inch-wide broken white lines supplemented with white non-reflective and one-way clear or red-clear retroreflective pavement markers spaced approximately 48 feet apart.

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FACTS – ROADWAY DESCRIPTION**General Description**

The northbound #1 traffic lane was bordered to the west by a 4-inch-wide solid yellow edgeline supplemented with one-way yellow retroreflective pavement markers spaced approximately 48 feet apart. West of the yellow edgeline there was an 8-foot-wide asphalt concrete left shoulder. West of the asphalt concrete shoulder, there was a 28-foot-wide vegetation-covered median. A double thrie beam barrier separated the northbound and southbound traffic lanes of Interstate 15.

The northbound #4 traffic lane was bordered to the east by a 4-inch-wide white edgeline. East of the white edgeline there was a 10.7-foot-wide asphalt concrete right shoulder. An asphalt concrete dike separated the right shoulder from a 9- to 10-foot-wide dirt area. Just south of where the Lancair impacted Interstate 15, there were eight powerlines at varying heights that crossed Interstate 15 in a southwesterly direction.

In the vicinity of this collision, vehicles on Interstate 15 northbound were controlled by the maximum speed limit of 70 miles per hour, per California Vehicle Code Section 22356 (b).

Weather Conditions

On April 20, 2016, Investigator Parent accessed weather information for Camp Pendleton Marine Corps Air Station in Camp Pendleton [1], which is depicted in Figure 2. The weather station (KNFG) was located approximately 12 miles southwest of the collision location.

Hourly Weather History & Observations												
Time (PDT)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
7:54 AM	50.0 °F	-	46.9 °F	89%	30.18 in	5.0 mi	NE	3.5 mph	-	N/A		Clear
8:54 AM	55.0 °F	-	48.9 °F	80%	30.18 in	5.0 mi	South	3.5 mph	-	N/A		Haze
9:54 AM	64.0 °F	-	51.1 °F	63%	30.17 in	5.0 mi	Calm	Calm	-	N/A		Haze

Figure 2. Weather data for April 2, 2016.

Lighting Conditions

This collision occurred during the hours of daylight. Astronomy data was obtained from the U.S. Naval Observatory [2] by Investigator Parent (Figure 3).

Fallbrook, San Diego County, CA (Longitude W117° 21', Latitude N33° 23')	
Saturday, April 2, 2016	Pacific Daylight Time
Sun	
Begin civil twilight	6:10 a.m.
Sunrise	6:35 a.m.
Sun transit	12:53 p.m.
Sunset	7:11 p.m.
End civil twilight	7:36 p.m.

Figure 3. Astronomical data for April 2, 2016.

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FACTS – PHYSICAL EVIDENCE DESCRIPTION**Overview**

On April 2, MAIT investigators surveyed the physical evidence, characteristics of the environment, and position of rest of the Nissan and Lancair utilizing a Global Positioning System (GPS) 900. The GPS 900 included a Leica RX900c controller, Leica ATX900 GNSS¹ Antenna, and GPS 900 RTK Rover. Engineer Tran operated the GPS 900 while Investigator Snider or Vazquez maintained scene notes.

The GPS 900 was operated using the World Geodetic System of 1984 (WGS84) and later converted to the North American Datum of 1983 (California Zone 6) coordinate system utilizing conversion software. The unit of measurement for this coordinate system was the U.S. foot and all measurements were based upon a reference point. The reference point was established in the dirt area, east of the asphalt concrete dike bordering the right shoulder. This location had an easting of 6284175.5 feet, a northing of 2071624.8 feet, and an elevation of 312.3 feet and was 2,597.5 feet north of the north edge of the Pala Mesa Drive overcrossing (measured along the white edgeline) and 16.9 feet east of, and perpendicular to, the same white edgeline. Refer to Annex A for the list of data points collected and their corresponding coordinates.

Physical Evidence Legend

Physical evidence surveyed by MAIT investigators on April 2 is presented in Table 1.

Table 1

Physical Evidence Identified and Documented by MAIT Investigators

Item	Point(s)	Item Description and Width at Specific Data Points
1	245 – 247	A blue and white material transfer, 8.8 feet in length
	245	Begin, tapered point
	246	0.3 foot in width
	247	End, tapered point
2A	248 – 250	A scrape/white material transfer, 16.1 feet in length
	248	Begin, tapered point
	249	0.4 foot in width
	250	End, tapered point
2B	251 – 259	A scrape/white material transfer, 143.9 feet in length
	251	Begin, tapered point
	252	0.2 foot in width
	253	0.3 foot in width
	254	0.5 foot in width
	255	0.5 foot in width
	256	0.5 foot in width
	257	0.8 foot in width
	258	0.5 foot in width
	259	End, tapered point

(table continues)

¹ Global Navigation Satellite System Antenna

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FACTS – PHYSICAL EVIDENCE DESCRIPTION**Physical Evidence Legend**

Item	Point(s)	Item Description and Width at Specific Data Points
2C	260 – 267	A scrape/white material transfer, 85.6 feet in length
	260	Begin, 0.7 foot in width
	261	0.6 foot in width
	262	0.7 foot in width
	263	0.3 foot in width
	264	0.3 foot in width
	265	0.1 foot in width
	266	0.1 foot in width
	267	End, tapered point
3A	268 – 270	A chop, 0.9 foot in length
	268	Endpoint, tapered point
	269	0.1 foot in width
	270	Endpoint, tapered point
3B	271 – 273	A chop, 1.6 feet in length
	271	Endpoint, tapered point
	272	0.1 foot in width
	273	Endpoint, tapered point
3C	274 – 276	A chop, 2.0 feet in length
	274	Endpoint, tapered point
	275	0.1 foot in width
	276	Endpoint, tapered point
3D	277 – 279	A chop, 2.3 feet in length
	277	Endpoint, 0.1 foot in width
	278	0.1 foot in width
	279	Endpoint, tapered point
3E	280 – 282	A chop, 1.4 feet in length
	280	Endpoint, tapered point
	281	0.1 foot in width
	282	Endpoint, tapered point
3F	283 – 285	A chop, 1.0 foot in length
	283	Endpoint, tapered point
	284	0.1 foot in width
	285	Endpoint, tapered point
3G	286 – 288	A chop, 1.6 feet in length
	286	Endpoint, 0.1 foot in width
	287	0.1 foot in width
	288	Endpoint, tapered point
3H	289 – 291	A chop, 1.8 feet in length
	289	Endpoint, 0.1 foot in width
	290	0.1 foot in width
	291	0.1 foot in width

(table continues)

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FACTS – PHYSICAL EVIDENCE DESCRIPTION

Physical Evidence Legend

Item	Point(s)	Item Description and Width at Specific Data Points
	292	0.1 foot in width
	293	0.1 foot in width
	294	Endpoint, 0.2 foot in width
3I	295 – 299	A chop, 1.6 feet in length
	295	Endpoint, tapered point
	296	0.1 foot in width
	297	0.1 foot in width
	298	0.1 foot in width
	299	Endpoint, 0.1 foot in width
3J	300 – 305	A chop, 3.5 feet in length
	300	Endpoint, tapered point
	301	0.1 foot in width
	302	0.1 foot in width
	303	0.1 foot in width
	304	0.1 foot in width
	305	Endpoint, tapered point
3K	306 – 311	A chop, 3.6 feet in length
	306	Endpoint, tapered point
	307	0.2 foot in width
	308	0.1 foot in width
	309	0.1 foot in width
	310	0.1 foot in width
	311	Endpoint, tapered point
3L	312 – 315	A chop, 4.5 feet in length
	312	Endpoint, tapered point
	313	0.1 foot in width
	314	0.1 foot in width
	315	Endpoint, tapered point
3M	316 – 318	A chop, 1.7 feet in length
	316	Endpoint, 0.1 foot in width
	317	0.1 foot in width
	318	Endpoint, tapered point
3N	319 – 321	A chop, 1.9 foot in length
	319	Endpoint, tapered point
	320	Less than 0.1 foot in width
	321	Endpoint, tapered point
4	322 – 324	Metal airplane component with remnants of white fiberglass
	322	Point at the fractured end
	323	Point on the radius
	324	Endpoint
5A	325 – 330	A blue and white material transfer, 12.5 feet in length
	325	Begin, 0.2 foot in width

(table continues)

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FACTS – PHYSICAL EVIDENCE DESCRIPTION**Physical Evidence Legend**

Item	Point(s)	Item Description and Width at Specific Data Points
	326	0.5 foot in width
	327	Deviation point, 0.6 foot in width
	328	0.6 foot in width
	329	0.5 foot in width
	330	End, tapered point
5B	331 – 343	A blue and white material transfer, 63.2 feet in length
	331	Begin, 0.6 foot in width
	332	0.5 foot in width
	333	Deviation point, 0.4 foot in width
	334	0.5 foot in width
	335	0.6 foot in width
	336	0.4 foot in width
	337	0.6 foot in width
	338	0.5 foot in width
	339	0.6 foot in width
	340	0.7 foot in width
	341	0.4 foot in width
	342	0.2 foot in width
	343	End, tapered point
6	344 – 349	A gray plastic vehicle component
	344	Point on the perimeter
	345	Point on the perimeter
	346	Point on the perimeter
	347	Point on the perimeter
	348	Point on the perimeter
	349	Point on the perimeter
7	350 – 351	A white material transfer, 12.0 feet in length
	350	Begin, 0.1 foot in width
	351	End, 0.1 foot in width
8	352 – 354	A furrow, 6.8 feet in length
	352	Begin, 0.3 foot in width
	353	0.9 foot in width
	354	End, 0.8 foot in width
9	355 – 367	An area of shattered glass and miscellaneous vehicle components, 2,264.2 square feet in area
	355	Point on the perimeter
	356	Point on the perimeter
	357	Point on the perimeter
	358	Point on the perimeter
	359	Point on the perimeter
	360	Point on the perimeter
	361	Point on the perimeter

(table continues)

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FACTS – PHYSICAL EVIDENCE DESCRIPTION**Physical Evidence Legend**

Item	Point(s)	Item Description and Width at Specific Data Points
	362	Point on the perimeter
	363	Point on the perimeter
	364	Point on the perimeter
	365	Point on the perimeter
	366	Point on the perimeter
	367	Point on the perimeter
N/A	205 – 208	Position of rest of the 2015 Nissan Sentra
	205	Outboard edge of the left-front tire
	206	Outboard edge of the right-front tire
	207	0.7 foot east of the outboard edge of the right-rear tire
	208	0.6 foot west of the outboard edge of the left-rear tire
N/A	209 – 240	Position of rest of the 2000 Nokes-Matthews Lancair IV-P airplane
	209	Left side of the fuselage at the left-rear tire
	210	Ground below the corner on the front of the left wing
	211	Ground below tip on the front of the left wing
	212	Ground below the corner on the front of the left wing
	213	Ground below the corner on the front of the left wing
	214	Ground below the back of the left wing tip
	215	Ground below the back of the left wing tip
	216	Ground below the back of the left wing tip
	217	Ground below the back of the left wing tip
	218	Ground below the back of the left wing at the left side of the fuselage
	219	Ground below the horizontal stabilizer at the left side of the fuselage
	220	Ground below the left corner of the horizontal stabilizer
	221	Ground below the left corner of the elevator
	222	Ground below the elevator at the left side of the rudder
	223	Ground below the rudder
	224	Ground below the vertical stabilizer
	225	Ground below the elevator at the right side of the rudder
	226	Ground below the right corner of the elevator
	227	Ground below the right corner of the horizontal stabilizer
	228	Ground below the horizontal stabilizer at the right side of the fuselage
	229	Ground below the back of the right wing at the right side of the fuselage
	230	Ground below the back of the right wing at the right side of the fuselage
	231	Ground below the back of the right wing tip
	232	Ground below the back of the right wing tip
	233	Ground below the back of the right wing tip
	234	Ground below the back of the right wing tip
	235	Ground below the corner on the front of the right wing
	236	Ground below tip on the front of the right wing
	237	Ground below the corner on the front of the right wing
	238	Ground below the corner on the front of the right wing
	239	Ground below the right-rear engine cowl
	240	Right side of the fuselage at the right-rear tire

INTERSTATE 15 (NORTHBOUND)
NORTH OF
PALA MESA DRIVE OVERCROSSING

W
N
E
S

Compass rose showing North (N), South (S), East (E), and West (W).



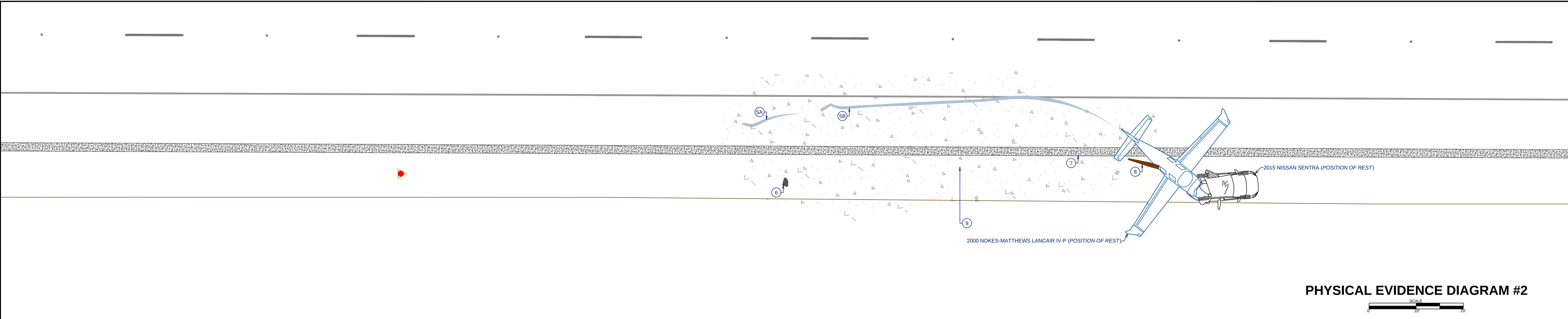
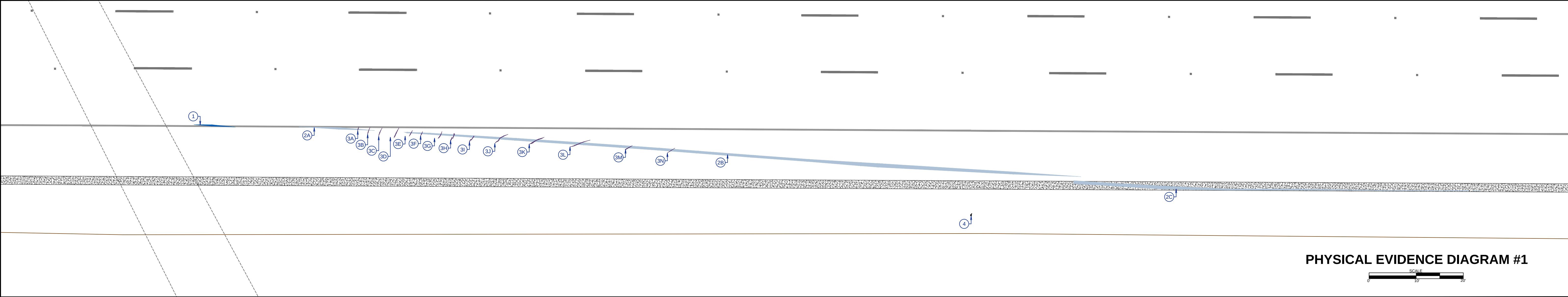
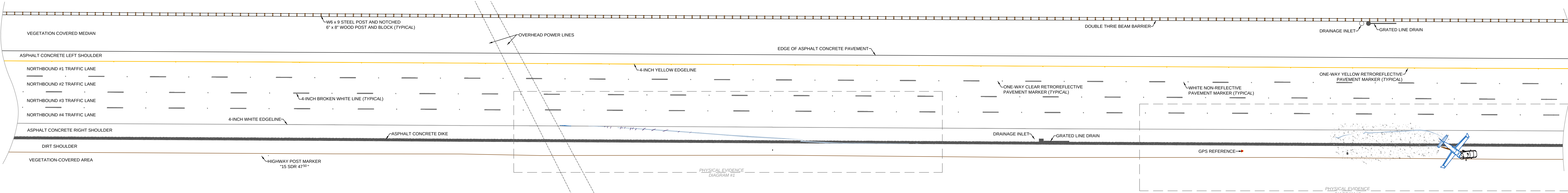
STATE OF CALIFORNIA
DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM
CHP 558D (Rev. 9-08) OPI 005 (MAT use only)
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SCALE
0 20 40
FEET

SCENE DIAGRAM
PREPARED BY: S. PARENT, ID 16159

NOTE: UNLESS OTHERWISE NOTED, ALL TRAFFIC LANES
WERE CONSTRUCTED OF PORTLAND CEMENT CONCRETE



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FACTS – PHYSICAL EVIDENCE LOG

As part of this investigation, five items of evidence were collected by MAIT investigators and are listed in Table 2. All evidence collected by MAIT was booked into evidence at the CHP Oceanside Area office (Property Control Number E20160147). Requests regarding the items of evidence listed below should be made directly to:

California Highway Patrol, Oceanside Area
435 La Tortuga
Vista, California 92081
(760) 643-3400

Table 2

Physical Evidence Collected by MAIT and Booked Into Evidence at the CHP Oceanside Area

Date	Time	Description [Location]
04/02/2016	1139	Recordable optical disc containing 46 digital images taken by Sergeant Buono at the collision scene [Interstate 15 northbound, north of Pala Mesa Drive overcrossing]
04/02/2016	1007 ^a	Recordable optical disc containing 489 digital images taken by MCS I Carlson the collision scene [Interstate 15 northbound, north of Pala Mesa Drive overcrossing]
04/02/2016	1255	Recordable optical disc containing 228 digital images taken by Investigator Vazquez at the collision scene [Interstate 15 northbound, north of Pala Mesa Drive overcrossing]
04/05/2016	1049	Recordable optical disc containing 118 digital images taken by Investigator Isbister of the Nissan [S&R Towing]
04/05/2016	1219	Recordable optical disc containing image of data retrieved by Investigator Isbister from the ACM installed in the Nissan [S&R Towing]

Note. ^aThe camera had not been adjusted for daylight savings time; therefore, the time is one hour behind.

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FACTS – DIGITAL IMAGE LOG

During the course of this investigation, MAIT investigators took a total of 881 digital images (Table 3). All digital images were transferred from the memory card of the camera to a recordable optical disc and booked into evidence.

Requests regarding the digital image files listed below should be made directly to:

California Highway Patrol, Oceanside Area
435 La Tortuga
Vista, California 92081
(760) 643-3400

Table 3

Digital Images Taken During the Course of this Investigation

Date	Images	Description [Location]
04/02/2016	IMG_4939 to IMG_4984	46 digital images taken by Sergeant Buono at the between 1139 and 1233 hours [collision scene].
04/02/2016	IMG_1080 to IMG_1568	489 digital images taken by MCS I Carlson between 1007 and 1258 hours ^a [collision scene].
04/02/2016	IMG_4985 to IMG_5212	228 digital images taken by Investigator Vazquez between 1255 and 1647 hours [collision scene].
04/05/2016	IMG_0338 to IMG_0455	118 digital images taken by Investigator Isbister between 1049 and 1442 hours [S&R Towing]

Note.^aThe camera had not been adjusted for daylight savings time; therefore, the time is one hour behind.

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM

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ANALYSIS AND OPINION – AIRBAG CONTROL MODULE

Overview

The Nissan was equipped with an airbag control module (ACM) with event data recorder (EDR) capability. An ACM is responsible for performing diagnostic checks of the various occupant protection devices installed in the vehicle and collecting and analyzing vehicle acceleration data to predict collision severity. This information is used by the ACM to make decisions related to the deployment of supplemental restraints (airbags and/or seatbelt pretensioners) when necessary to protect the occupants of the vehicle in a collision. As a secondary function, the ACM may record data related to deployment and/or non-deployment events into non-volatile memory after a deployment decision has been made. Once recorded by the ACM, deployment data may not be overwritten; however, unlocked non-deployment data may be overwritten by subsequent events. The ACM was capable of recording up to two events. Pre-crash values are asynchronous and can be gathered by the ACM through the vehicle's communication network at any time during the data sample period, which can account for differences in data sampling between events.

2015 Nissan Sentra

At 1219 hours, on April 5, Investigator Isbister imaged the data recorded on the ACM. This was accomplished by connecting a Bosch Crash Data Retrieval (CDR) system interface module through the Diagnostic Link Connector (DLC) of the vehicle, in accordance with CDR system guidelines. The key was not available during the imaging process, so it was necessary to bypass the ignition by back powering the module through the supplemental restraints fuse. Availability of a report (Annex B) in the CDR system software indicated a valid image was copied from the ACM. The original data remained unaltered on the ACM, which remained installed in the vehicle. A copy of the imaged data was recorded to a recordable optical disc and booked into evidence at the CHP Oceanside Area.

Events

One deployment event was recorded during this collision event.

System Status at Event

Although not inclusive of all data, the following information was noted:

- The lifetime counter was reported as 2,043,511 seconds; therefore, the ACM had been powered for a total of nearly 568 hours between the vehicle's first ignition activation to the time of the event.
- A complete file was recorded, indicating a state in which a complete EDR data set had been stored.
- Ignition cycles at the time of the imaging of the ACM were reported as 2,276 and 2,275 at the time of the event, indicating there was one power cycle after the event was recorded. This additional power cycle was induced when power was applied to the ACM during the imaging process by Investigator Isbister.
- The multi-event status was reported as "1," indicating one event was stored on the ACM during the ignition cycle in which the event occurred.

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ANALYSIS AND OPINION – AIRBAG CONTROL MODULE**2015 Nissan Sentra – System Status at Event**

- The safety belt status for the driver and passenger was reported as ON (fastened), indicating a state in which a latch plate was inserted into the buckle for the left- and right-front seating positions.
- The frontal airbag warning lamp was reported as OFF; therefore, the airbag warning lamp was not illuminated at the time of the event and the ACM was in normal operation mode.
- The frontal airbag suppression switch was reported as OFF, indicating a state in which the front passenger airbag was not suppressed at the time of the event.
- The maximum recorded cumulative longitudinal velocity change was 28 miles per hour (rear to front) and occurred 180 milliseconds (0.180 second) after time zero.
- The maximum recorded cumulative lateral velocity change was 1 mile per hour (left to right) and occurred 155 milliseconds (0.155 second) after time zero.
- The maximum recorded longitudinal acceleration was 21.5 g (rear to front) and occurred 95 milliseconds (0.095 second) after time zero.
- The maximum recorded lateral acceleration was –16.5 g (right to left) and occurred 67.5 milliseconds (0.0675 second) after time zero.

Deployment Command Data

The following supplemental restraints were commanded for deployment during the event:

- Side airbag, right-front passenger, 85 milliseconds (0.085 second) after time zero
- Side curtain/tube airbag, right side, 85 milliseconds (0.085 second) after time zero
- Pretensioner, right-front passenger, 85 milliseconds (0.085 second) after time zero

Pre-Crash Data

Recorded pre-crash data included 11 samples at a resolution of 0.5 second, starting five seconds prior to time zero.

Time Stamp (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % full	Engine RPM	Motor RPM	Service Brake (On, Off)	Steering Input (deg)
-5.0	0 [0]	0	700	0	On (Brake Activated)	-5
-4.5	0 [0]	0	700	0	On (Brake Activated)	-5
-4.0	0 [0]	0	700	0	On (Brake Activated)	-5
-3.5	0 [0]	0	700	0	On (Brake Activated)	-5
-3.0	0 [0]	0	700	0	On (Brake Activated)	-5
-2.5	0 [0]	0	700	0	On (Brake Activated)	-5
-2.0	0 [0]	0	700	0	On (Brake Activated)	-5
-1.5	0 [0]	0	700	0	On (Brake Activated)	-5
-1.0	0 [0]	0	700	0	On (Brake Activated)	-5
-0.5	0 [0]	0	700	0	On (Brake Activated)	-5
0.0	0 [0]	0	700	0	On (Brake Activated)	-5

Figure 4. Pre-crash data recorded during the event.

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ANALYSIS AND OPINION – AIRBAG CONTROL MODULE

2015 Nissan Sentra – Pre-Crash Data

Although not inclusive of all data reported in the pre-crash data, the following information was noted:

- The indicated vehicle speed remained at 0 miles per hour during all data samples.
- The accelerator pedal remained at 0 percent of full during all data samples.
- The engine revolutions per minute (RPM) remained at 700 during all data samples.
- The service brake was reported as ON (brake activated) during all data samples, a state in which enough force was applied to the brake pedal to activate the brake lamps.
- The steering input was reported as –5 degrees during all data samples, a state in which the steering wheel was turned slightly to the right.

Safety Recalls

A safety recall is defined as a recall by the manufacturer (or governmental agency) due to an immediate safety hazard with the involved vehicle. A recall is initiated when a motor vehicle or item of motor vehicle equipment (including tires) does not comply with a Federal Motor Vehicle Safety Standard (FMVSS), or when there is a safety-related defect in the vehicle or equipment.

A search of safety recalls by vehicle identification number was conducted through the National Highway Traffic Safety Administration (NHTSA) [3]. There were no open recalls listed for the Nissan.

Conclusions

The data imaged from the ACM installed in the Nissan were related to this collision based upon the following:

- A complete file was recorded for each event, indicating a state in which a complete EDR data set had been stored.
- There was only one ignition cycle between the event and imaging, which occurred when power was applied to the ACM during the imaging by Investigator Isbister.
- The reported airbag deployments were consistent with the observed conditions of the airbags in the Nissan.
- The indicated vehicle speed of 0 miles per hour, combined with the accelerator pedal at 0 percent of full and the engine RPM of 700 suggests the Nissan was idling while stopped.

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ANALYSIS AND OPINION – PHYSICAL EVIDENCE ANALYSIS**Physical Evidence Origin**

The following conclusions as to the origin of each physical evidence item (Table 4) were based upon the following: a) an evaluation of the physical evidence, including the location and characteristics of each item, b) observation of damage sustained by the Nissan and Lancair, and c) analysis of the motion of the Nissan and Lancair throughout the collision sequence.

Table 4

Conclusions Made Regarding the Physical Evidence Documented at the Collision Site

Item	Physical Evidence Origin
1	A blue and white material transferred by the underside of the rudder on the Lancair when it impacted the #4 traffic lane and right shoulder.
2A	A white material transfer and scrape created by the underside of the fuselage and rudder of the Lancair after it touched down and slid on the right shoulder.
2B	A white material transfer and scrape created by the underside of the fuselage and rudder of the Lancair after it touched down and slid on the right shoulder.
2C	A white material transfer and scrape created by the underside of the fuselage and rudder of the Lancair after it touched down and impacted the asphalt concrete dike bordering the right shoulder.
3A	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3B	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3C	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3D	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3E	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3F	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3G	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3H	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound

(table continues)

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM

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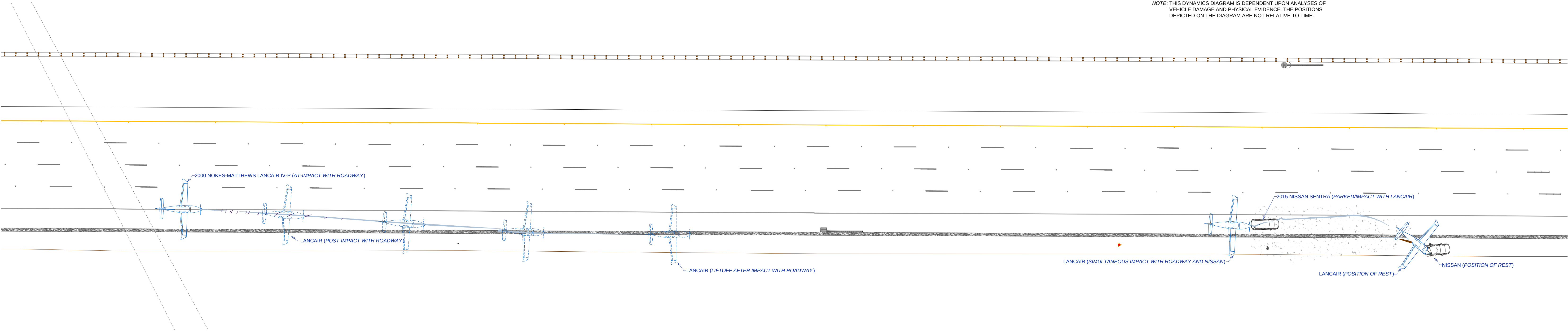
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ANALYSIS AND OPINION – PHYSICAL EVIDENCE ANALYSIS

Physical Evidence Origin

Item	Physical Evidence Origin
3I	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3J	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3K	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3L	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3M	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
3N	A chop created by the spinning propeller as the Lancair slid on the right shoulder after impacting Interstate 15 northbound
4	The pitot tube detached from the underside of the left wing when the pitot tube contacted the #3 traffic lane after the Lancair touched down
5A	A blue and white material transferred by the underside of the fuselage of the Lancair as it moved from first contact to maximum engagement with the Nissan
5B	A blue and white material transferred by the underside of the fuselage of the Lancair as it and the Nissan translated as one unit after impact
6	A gray plastic vehicle component detached from the rear of the Nissan during the impact
7	A white material transferred by the underside of the fuselage of the Lancair as it and the Nissan translated as one unit after impact
8	A furrow created by the underside of the fuselage of the Lancair as it and the Nissan translated as one unit after impact
9	An area of shattered glass and miscellaneous vehicle components deposited by the Nissan after impact with the Lancair

NOTE: THIS DYNAMICS DIAGRAM IS DEPENDENT UPON ANALYSES OF VEHICLE DAMAGE AND PHYSICAL EVIDENCE. THE POSITIONS DEPICTED ON THE DIAGRAM ARE NOT RELATIVE TO TIME.



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ANALYSIS AND OPINION – AREA OF IMPACT

Overview

There were two areas of impact (AOI) identified during the course of this investigation which are described below:

Area of Impact #1

The underside of the rudder and fuselage of the Lancair impacted the roadway at GPS coordinates of: Latitude 33°20'49.22560" N (33.34701°) and Longitude 117°09'31.56567" W (–117.15877°). The GPS coordinates had an equivalent location 2,069 feet north of the north edge of the Pala Mesa Drive overcrossing (measured along the white edgeline) and less than a foot west of, and perpendicular to, the same white edgeline. AOI #1 was established based upon the following:

- Physical evidence identified and documented at the collision scene
- Vehicle damage
- Vehicle dynamics

Area of Impact #2

The underside of the nose of the Lancair impacted the roadway and Nissan at GPS coordinates of: Latitude 33°20'55.17222" N (33.34866°) and Longitude 117°09'31.39306" W (–117.15872°). The GPS coordinates had an equivalent location 2,672 feet north of the north edge of the Pala Mesa Drive overcrossing (measured along the white edgeline) and 6 feet east of, and perpendicular to, the same white edgeline. AOI #2 was established based upon the following:

- Physical evidence identified and documented at the collision scene
- Vehicle damage
- Vehicle dynamics

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CONCLUSIONS – SUMMARY

Overview

The following conclusions were based on the totality of this MAIT investigation. The investigation included such elements as: a) an examination of the collision scene for physical evidence, b) observation of damage sustained by the Nissan and Lancair, c) analysis of the data imaged from the ACM installed in the Nissan, and d) analysis of the motion of the Nissan and Lancair during the collision sequence:

Pre-Impact

- The Nissan was stopped completely on the right shoulder of Interstate 15 northbound, north of the Pala Mesa Drive overcrossing. The vehicle had been stopped for at least 5 seconds.

At-Impact

- The Lancair was traveling north above Interstate 15, north of the Pala Mesa Drive overcrossing when the airplane impacted the roadway. Upon impacting Interstate 15 northbound, the Lancair slid on the underside of the fuselage and rudder for 272 feet along the right shoulder of Interstate 15.

Post-Impact

- After sliding for 272 feet, the Lancair became airborne for 308 feet before it impacted the right shoulder and rear of the Nissan.
- As a result of the impact, the Nissan was accelerated in a northerly direction to a speed of 28 miles per hour.
- The Nissan and Lancair continued in a northeasterly direction as a combined unit for 100 feet before coming to rest in the dirt area east of the right shoulder of Interstate 15 northbound.

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ANNEX A: SURVEY DATA

POINT	EASTING	NORTHING	HEIGHT	POINT	EASTING	NORTHING	HEIGHT
1	6284175.5	2071624.8	312.3	42	6284123.6	2069408.7	303.2
2	6284120.3	2069558.2	303.8	43	6284135.4	2069408.5	304.1
3	6284122.2	2069555.8	303.6	44	6284134.1	2069384.2	303.9
4	6284118.5	2069560.6	303.9	45	6284126.7	2069341.9	303.3
5	6284122.7	2069560.1	303.7	46	6284132.9	2069331.0	303.5
6	6284117.9	2069556.4	303.9	47	6284121.6	2069365.7	302.5
7	6284176.8	2069025.5	328.6	48	6284117.3	2069368.9	302.7
8	6284169.5	2069025.8	328.2	49	6284120.7	2069371.3	302.5
9	6284132.3	2069047.6	303.5	50	6284120.9	2069384.5	302.6
10	6284120.4	2069047.6	301.7	51	6284135.4	2069640.3	305.1
11	6284118.6	2069047.7	301.3	52	6284126.2	2069641.9	304.4
12	6284110.6	2069048.0	301.8	53	6284124.5	2069642.0	303.9
13	6284108.9	2069047.5	301.7	54	6284118.0	2069642.0	304.1
14	6284108.4	2069047.5	301.7	55	6284114.5	2069642.0	304.4
15	6284088.9	2069064.1	302.3	56	6284102.2	2069653.1	304.6
16	6284076.6	2069062.2	302.5	57	6284090.0	2069650.8	304.9
17	6284064.7	2069054.1	302.7	58	6284078.0	2069643.2	305.1
18	6284052.8	2069043.1	302.9	59	6284065.6	2069642.0	305.2
19	6284052.2	2069043.5	302.8	60	6284065.4	2069632.1	305.2
20	6284052.7	2069045.8	302.8	61	6284057.6	2069628.9	305.1
21	6284044.5	2069045.6	302.7	62	6284046.7	2069630.5	304.7
22	6284034.9	2069046.6	302.3	63	6284028.8	2069632.3	304.2
23	6284024.7	2069044.7	302.0	64	6284033.1	2069838.6	304.9
24	6284022.7	2069113.4	301.7	65	6284051.3	2069842.3	305.7
25	6284019.7	2069220.0	302.3	66	6284062.3	2069844.0	305.9
26	6284037.8	2069222.2	302.8	67	6284070.8	2069877.7	306.2
27	6284048.5	2069222.8	303.2	68	6284083.4	2069888.5	306.1
28	6284056.3	2069226.9	303.3	69	6284095.4	2069896.1	305.9
29	6284057.3	2069239.5	303.4	70	6284107.7	2069898.5	305.6
30	6284023.2	2069382.5	302.2	71	6284119.9	2069900.9	305.4
31	6284041.3	2069380.8	303.4	72	6284130.3	2069901.2	304.8
32	6284052.1	2069386.9	303.8	73	6284132.1	2069901.4	305.2
33	6284059.7	2069388.8	304.0	74	6284142.1	2069902.4	306.2
34	6284060.1	2069385.6	304.0	75	6284146.7	2070144.6	307.3
35	6284060.4	2069386.7	304.1	76	6284137.5	2070145.7	306.3
36	6284072.4	2069397.7	303.9	77	6284135.8	2070145.6	305.9
37	6284084.5	2069405.7	303.7	78	6284125.2	2070144.4	306.4
38	6284096.7	2069408.0	303.6	79	6284113.3	2070143.8	306.6
39	6284111.7	2069408.4	303.2	80	6284101.0	2070141.4	306.8
40	6284114.0	2069408.5	303.1	81	6284089.0	2070132.6	307.1
41	6284121.9	2069408.6	302.7	82	6284076.4	2070122.8	307.1

(table continues)

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ANNEX A: SURVEY DATA

POINT	EASTING	NORTHING	HEIGHT	POINT	EASTING	NORTHING	HEIGHT
83	6284068.6	2070124.5	306.9	124	6284145.0	2071019.2	309.9
84	6284064.4	2070125.5	306.7	125	6284132.7	2071017.7	310.2
85	6284039.7	2070125.9	306.0	126	6284120.5	2071013.6	310.4
86	6284044.1	2070325.7	307.0	127	6284108.3	2071001.8	310.6
87	6284070.1	2070332.7	307.7	128	6284096.9	2071034.2	310.9
88	6284073.2	2070333.0	307.8	129	6284089.0	2071034.6	310.7
89	6284081.9	2070361.8	308.2	130	6284077.9	2071035.1	310.2
90	6284094.4	2070374.4	308.1	131	6284060.4	2071037.8	309.7
91	6284106.4	2070386.4	307.9	132	6284063.2	2071162.8	310.4
92	6284118.6	2070389.4	307.6	133	6284082.0	2071162.5	310.8
93	6284130.8	2070390.1	307.4	134	6284092.0	2071160.8	311.0
94	6284141.5	2070389.9	306.7	135	6284099.1	2071130.0	311.2
95	6284143.2	2070390.0	307.1	136	6284111.5	2071146.9	311.0
96	6284152.0	2070391.3	307.8	137	6284123.9	2071159.2	310.6
97	6284159.1	2070645.6	308.5	138	6284134.0	2071066.7	310.3
98	6284148.8	2070641.9	308.1	139	6284146.1	2071072.7	310.1
99	6284147.1	2070641.8	307.7	140	6284157.0	2071076.7	309.6
100	6284136.5	2070643.9	308.2	141	6284158.9	2071076.8	309.9
101	6284124.1	2070631.3	308.4	142	6284169.5	2071080.9	310.3
102	6284111.7	2070628.4	308.6	143	6284172.5	2071264.5	311.2
103	6284099.6	2070615.5	308.9	144	6284163.0	2071263.8	310.6
104	6284088.3	2070650.5	309.2	145	6284161.2	2071263.7	310.1
105	6284080.5	2070650.9	309.0	146	6284150.5	2071261.2	310.6
106	6284076.7	2070653.1	308.8	147	6284138.4	2071259.7	310.8
107	6284051.6	2070656.9	308.3	148	6284126.1	2071254.8	311.0
108	6284056.6	2070875.4	309.4	149	6284113.6	2071243.2	311.3
109	6284074.4	2070878.4	309.8	150	6284102.3	2071273.4	311.5
110	6284085.9	2070890.4	310.1	151	6284094.6	2071274.9	311.2
111	6284093.5	2070889.8	310.3	152	6284065.7	2071275.2	310.5
112	6284106.0	2070905.6	310.2	153	6284069.1	2071431.4	311.0
113	6284118.3	2070916.9	310.0	154	6284087.2	2071434.6	311.7
114	6284130.6	2070920.9	309.7	155	6284098.1	2071434.2	312.1
115	6284142.7	2070922.0	309.5	156	6284105.6	2071417.3	312.2
116	6284143.1	2070920.4	309.5	157	6284118.0	2071436.4	312.1
117	6284153.4	2070921.6	309.2	158	6284130.2	2071447.9	311.9
118	6284155.3	2070921.8	309.5	159	6284142.6	2071452.6	311.7
119	6284165.4	2070920.7	310.1	160	6284155.1	2071457.3	311.4
120	6284165.8	2070864.9	310.2	161	6284165.7	2071460.6	310.9
121	6284167.2	2071019.6	310.1	162	6284167.5	2071460.3	311.3
122	6284157.6	2071019.9	309.8	163	6284177.6	2071458.6	312.2
123	6284155.8	2071019.6	309.5	164	6284165.3	2071462.4	310.9

(table continues)

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM**CHP 558D (Rev. 9-08) OPI 065 (MAIT use only)**

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ANNEX A: SURVEY DATA

POINT	EASTING	NORTHING	HEIGHT	POINT	EASTING	NORTHING	HEIGHT
165	6284163.3	2071465.7	311.1	206	6284184.4	2071803.8	313.4
166	6284165.2	2071466.1	310.9	207	6284184.8	2071794.9	313.4
167	6284165.7	2071485.5	310.8	208	6284178.0	2071794.8	312.6
168	6284181.3	2071666.9	313.1	209	6284178.7	2071793.8	312.7
169	6284171.9	2071668.0	312.2	210	6284177.9	2071792.7	312.6
170	6284170.2	2071668.3	311.7	211	6284167.2	2071800.8	312.6
171	6284159.5	2071666.3	312.2	212	6284166.4	2071800.3	312.6
172	6284146.9	2071645.9	312.4	213	6284164.9	2071799.6	312.7
173	6284134.6	2071640.7	312.6	214	6284164.4	2071799.0	312.7
174	6284122.4	2071629.4	312.8	215	6284165.5	2071798.9	312.6
175	6284111.0	2071659.1	313.1	216	6284165.9	2071798.6	312.6
176	6284103.0	2071658.5	312.8	217	6284166.1	2071798.6	312.6
177	6284092.6	2071658.5	312.5	218	6284175.2	2071789.4	312.5
178	6284074.0	2071662.4	311.9	219	6284170.9	2071781.5	312.2
179	6284078.1	2071717.4	311.2	220	6284166.8	2071784.3	312.5
180	6284078.1	2071720.9	311.2	221	6284165.8	2071783.4	312.5
181	6284078.4	2071720.9	311.2	222	6284169.5	2071779.8	312.2
182	6284078.5	2071740.6	311.7	223	6284167.9	2071777.5	312.3
183	6284077.5	2071818.6	312.8	224	6284169.2	2071778.2	312.3
184	6284096.0	2071819.5	313.2	225	6284170.1	2071779.2	312.2
185	6284106.8	2071821.3	313.7	226	6284174.3	2071776.3	312.4
186	6284114.2	2071803.2	313.8	227	6284175.1	2071777.4	312.4
187	6284126.6	2071821.7	313.7	228	6284171.6	2071781.0	312.1
188	6284139.0	2071834.0	313.4	229	6284178.5	2071786.9	312.6
189	6284151.2	2071839.1	313.2	230	6284178.7	2071786.7	312.7
190	6284163.3	2071838.1	313.0	231	6284189.2	2071779.6	313.8
191	6284173.9	2071834.5	312.4	232	6284189.2	2071779.5	313.8
192	6284175.7	2071834.2	312.8	233	6284189.6	2071779.0	313.8
193	6284185.5	2071830.4	313.4	234	6284189.7	2071778.2	313.7
194	6284188.5	2071997.2	314.5	235	6284190.8	2071780.3	313.7
195	6284179.2	2071994.9	313.6	236	6284191.2	2071781.0	313.8
196	6284177.4	2071993.7	313.1	237	6284181.3	2071789.9	313.0
197	6284166.8	2071991.8	313.7	238	6284181.2	2071790.3	313.0
198	6284154.5	2071984.0	314.0	239	6284182.1	2071791.5	313.1
199	6284142.2	2071978.9	314.1	240	6284183.9	2071793.8	313.3
200	6284129.9	2071966.9	314.3	241	6284169.4	2071101.5	310.4
201	6284117.2	2071945.8	314.3	242	6284169.1	2071084.7	310.3
202	6284109.5	2071945.3	314.0	243	6284060.2	2071032.7	309.7
203	6284098.5	2071944.7	313.8	244	6284060.6	2071045.3	309.8
204	6284080.3	2071943.5	313.3	245	6284146.4	2071096.4	310.1
205	6284178.3	2071803.6	312.7	246	6284146.6	2071100.2	310.1

(table continues)

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM**CHP 558D (Rev. 9-08) OPI 065 (MAIT use only)**

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ANNEX A: SURVEY DATA

POINT	EASTING	NORTHING	HEIGHT	POINT	EASTING	NORTHING	HEIGHT
247	6284147.1	2071105.2	310.1	288	6284148.7	2071148.2	310.2
248	6284147.2	2071118.7	310.1	289	6284150.7	2071150.8	310.1
249	6284147.7	2071127.2	310.1	290	6284150.5	2071151.0	310.1
250	6284148.3	2071134.8	310.1	291	6284150.2	2071151.1	310.1
251	6284148.8	2071141.0	310.1	292	6284150.2	2071151.3	310.1
252	6284148.9	2071141.6	310.1	293	6284149.7	2071151.5	310.1
253	6284149.2	2071146.2	310.1	294	6284149.3	2071151.6	310.2
254	6284150.7	2071164.5	310.1	295	6284151.0	2071154.8	310.1
255	6284152.6	2071186.8	310.1	296	6284150.9	2071154.9	310.1
256	6284156.3	2071226.7	310.1	297	6284150.6	2071155.1	310.1
257	6284157.5	2071241.3	310.2	298	6284150.6	2071155.2	310.1
258	6284159.7	2071270.1	310.2	299	6284149.9	2071155.8	310.1
259	6284160.7	2071284.4	310.3	300	6284151.5	2071160.2	310.1
260	6284161.9	2071282.8	310.4	301	6284151.1	2071160.7	310.1
261	6284162.4	2071289.1	310.5	302	6284151.0	2071160.9	310.1
262	6284163.3	2071301.6	310.8	303	6284150.4	2071161.3	310.1
263	6284164.0	2071315.3	310.8	304	6284150.0	2071162.1	310.1
264	6284164.3	2071331.1	310.9	305	6284149.6	2071163.0	310.2
265	6284164.8	2071349.3	311.0	306	6284151.8	2071167.5	310.1
266	6284165.1	2071366.6	311.0	307	6284151.5	2071168.2	310.1
267	6284165.2	2071368.4	311.0	308	6284151.1	2071168.8	310.2
268	6284148.3	2071131.1	310.1	309	6284150.8	2071169.4	310.2
269	6284147.9	2071131.2	310.1	310	6284150.6	2071170.0	310.2
270	6284147.4	2071131.4	310.1	311	6284150.3	2071170.7	310.2
271	6284149.1	2071133.2	310.1	312	6284152.5	2071176.1	310.2
272	6284148.7	2071133.3	310.1	313	6284152.3	2071177.1	310.1
273	6284147.6	2071133.8	310.1	314	6284151.8	2071178.3	310.1
274	6284149.5	2071135.6	310.1	315	6284151.1	2071180.4	310.2
275	6284148.8	2071135.8	310.1	316	6284153.3	2071187.9	310.1
276	6284147.7	2071136.4	310.1	317	6284152.9	2071188.6	310.1
277	6284149.8	2071138.0	310.1	318	6284152.5	2071189.4	310.1
278	6284149.0	2071138.4	310.1	319	6284154.2	2071196.7	310.1
279	6284147.8	2071139.1	310.2	320	6284153.7	2071197.5	310.1
280	6284149.6	2071141.2	310.1	321	6284153.2	2071198.4	310.1
281	6284149.2	2071141.5	310.1	322	6284168.6	2071261.0	310.8
282	6284148.4	2071141.9	310.1	323	6284168.4	2071260.8	310.8
283	6284149.6	2071144.5	310.1	324	6284168.2	2071261.1	310.7
284	6284149.2	2071144.7	310.1	325	6284166.2	2071697.3	312.0
285	6284148.7	2071144.9	310.1	326	6284166.3	2071697.9	312.0
286	6284150.1	2071147.4	310.1	327	6284166.6	2071699.4	312.0
287	6284149.5	2071147.9	310.1	328	6284166.2	2071700.5	312.0

(table continues)

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM**CHP 558D (Rev. 9-08) OPI 065 (MAIT use only)**

DATE OF COLLISION (MONTH-DAY-YEAR)	TIME (2400)	NCIC	OFFICER I.D.	NUMBER	MAIT CASE NUMBER	PAGE
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ANNEX A: SURVEY DATA

POINT	EASTING	NORTHING	HEIGHT
329	6284165.7	2071701.8	312.1
330	6284164.2	2071709.4	312.2
331	6284163.6	2071713.7	312.3
332	6284162.9	2071714.9	312.3
333	6284162.5	2071715.7	312.3
334	6284162.9	2071716.8	312.3
335	6284163.1	2071717.7	312.3
336	6284162.8	2071725.1	312.3
337	6284162.5	2071734.0	312.4
338	6284162.1	2071746.9	312.5
339	6284161.6	2071754.2	312.6
340	6284162.1	2071761.6	312.6
341	6284163.3	2071766.4	312.5
342	6284164.5	2071769.4	312.5
343	6284167.7	2071775.2	312.3
344	6284179.7	2071706.6	312.8
345	6284179.3	2071705.7	312.7
346	6284177.9	2071706.1	312.5
347	6284177.8	2071706.4	312.5
348	6284178.5	2071706.9	312.6
349	6284179.4	2071706.8	312.7
350	6284174.1	2071767.7	312.5
351	6284174.3	2071779.7	312.5
352	6284175.1	2071779.2	312.4
353	6284176.3	2071783.5	312.5
354	6284177.0	2071785.7	312.5
355	6284155.9	2071703.1	312.4
356	6284159.8	2071694.8	312.3
357	6284169.3	2071691.6	311.8
358	6284176.9	2071696.7	312.5
359	6284182.2	2071701.5	313.1
360	6284183.3	2071707.4	313.3
361	6284187.5	2071719.2	313.5
362	6284183.9	2071742.4	313.3
363	6284182.0	2071775.2	313.1
364	6284165.8	2071788.2	312.5
365	6284162.7	2071770.0	312.6
366	6284156.0	2071755.6	312.7
367	6284156.3	2071727.3	312.6

MULTIDISCIPLINARY ACCIDENT INVESTIGATION TEAM NARRATIVE/DIAGRAM

CHP 558D (Rev. 9-08) OPI 065 (MAIT use only)

DATE OF COLLISION (MONTH-DAY-YEAR)	TIME (2400)	NCIC	OFFICER I.D.	NUMBER	MAIT CASE NUMBER	PAGE
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ANNEX B: BOSCH CDR REPORT – 2015 NISSAN SENTRA

The report contained within this Annex was generated by the Bosch Crash Data Retrieval (CDR) software after imaging the ACM installed in the 2015 Nissan Sentra.

IMPORTANT NOTICE: Robert Bosch LLC and the manufacturers whose vehicles are accessible using the CDR System urge end users to use the latest production release of the Crash Data Retrieval system software when viewing, printing or exporting any retrieved data from within the CDR program. Using the latest version of the CDR software is the best way to ensure that retrieved data has been translated using the most current information provided by the manufacturers of the vehicles supported by this product.

CDR File Information

User Entered VIN	3N1AB7AP0FY276084
User	J. Isbister, ID 14748
Case Number	BL-008-16
EDR Data Imaging Date	04/05/2016
Crash Date	04/02/2016
Filename	3N1AB7AP0FY276084_ACM.CDRX
Saved on	Tuesday, April 5 2016 at 12:19:53
Collected with CDR version	Crash Data Retrieval Tool 16.4
Reported with CDR version	Crash Data Retrieval Tool 16.6
EDR Device Type	Airbag Control Module
Event(s) recovered	Event Record 1

Comments

ACM imaged at S and R Towing, Oceanside

Consent (202D) from Owner (EAN Holdings) and Driver (Aaron McCann)

Recommended tires: 205/55R16 89H

Installed tires: Continental ContiproContact 205/55R16 89H (x4)

No key fob, 1st attempt through back-power

Data Limitations

General Information:

Data limitations are intended to assist in reading event data that has been imaged from the vehicle's Air bag Control Unit (ACU). Event data should be considered in conjunction with other available physical evidence from the vehicle and scene.

Airbag Control Unit (ACU)

- The Air bag Control Unit (ACU) can store two types of events: Non-Deployment Events and Deployment.
 - A Non-Deployment Event is a crash or other physical occurrence which causes the ACU algorithm to be activated, but in which deployment thresholds are not reached.
 - A Deployment Event is a crash or other physical occurrence which causes ACU deployment thresholds to be reached or exceeded. Depending on the vehicle model, one or more of the following may be activated during a Deployment Event: front air bags, seat-mounted side airbags, roof-mounted or door-mounted curtain air bags, pretensioners, or pop-up roll bars.
- The ACU can record up to two events. If additional events occur subsequently, the older of the two events already recorded (i.e. the one which occurred first) is overwritten.
 - A Non-Deployment Event can be overwritten by another Non-Deployment event, or by a Deployment Event.
 - A Deployment Event has higher priority than a Non-Deployment Event, and cannot be interrupted or overwritten by another event.
 - The data pertaining to a Deployment Event is locked after being recorded. However, a second event can still be recorded subsequently in the portion of the event memory which is not locked.
- Event data includes both pre-crash data and crash data.
 - If the power supply to the ACU is lost during an event, all or part of the event data may not be recorded.
 - In addition to the recording of event data, the ACU has the ability to perform diagnostics and record Diagnostic Trouble Codes (DTCs).

Data Element Sign Convention:

The following table provides an explanation of the sign convention for data elements in the CDR report.

Data Element Name	Positive Sign Notation Indicates
Longitudinal Acceleration	Forward
Delta-V, Longitudinal	Forward
Maximum Delta-V, Longitudinal	Forward
Lateral Acceleration	Left to Right
Delta-V, Lateral	Left to Right
Maximum Delta-V, Lateral	Left to Right
Vehicle Roll Angle	Left to Right Rotation
Steering Input	Left Turn

- "Life Time Counter (sec)" indicates the elapsed time, in seconds, from the vehicle's first ignition activation until the start of the first recorded event. The counter is incremented whenever the vehicle's ignition is on. The counter is reset to 0 if the ACU is replaced.
- "Complete File Recorded" indicates whether a complete EDR data set has been stored after the event. "Yes" indicates that a complete data set has been recorded. "No" indicates that only a portion of the data set has been recorded, for example due to the power to the ACU being lost during the event.
- "Multi-Event, Number of Events (1, 2)" indicates the number of events which are stored during a given ignition cycle. A Multi-Event occurs whenever the time between Event 2 trigger threshold and Event 1 trigger threshold is less than or equal to 5 seconds during the same ignition cycle, and "2" will be recorded in this case. Otherwise, "1" will be recorded.
- "Air Bag Warning Lamp (On, Off)" indicates whether the ACU was in trouble mode or in normal operation mode at the time of the event. "On" indicates that the air bag warning lamp was illuminated at the time of the event, and the ACU was in trouble mode. "Off" indicates that the air bag warning lamp was not illuminated at the time of the event, and the ACU was in normal operation mode.
- "Frontal Air Bag Suppression Switch Status" indicates whether front passenger air bag deployment was suppressed at the time of the event. "On" indicates that the front passenger air bag was suppressed at the time of the event (deployment inhibited). "Off" indicates that the front passenger air bag was not suppressed at the time of the event (deployment enabled).
- "Delta-V, Longitudinal" indicates the cumulative change in velocity along the longitudinal direction.
- "Acceleration, Longitudinal" indicates the rate of change of velocity with time along the longitudinal direction.
- "Delta-V, Lateral" indicates the cumulative change in velocity along the lateral direction.
- "Acceleration, Lateral" indicates the rate of change of velocity with time along the lateral direction.
- "Engine Throttle, % full" indicates the position of the accelerator pedal as a percentage of the fully depressed position.
- "Service Brake (On, Off)" indicates whether the service brake is activated ("On") or not activated ("Off").
- "Steering Input (deg)" indicates the angular displacement of the steering wheel measured in degrees. -250 deg indicates a 250 degree turn to the right of the steering wheel, 0 deg indicates the straight-ahead steering wheel position, and 250 deg indicates a 250 degree turn to the left of the steering wheel.
- The notation "CLP" indicates that the measurement captured by a sensor exceeded the design range of the sensor.
- "Seat Track Position Switch, Foremost, Status, Driver (Yes/No)" indicates whether the driver's seat is positioned within a designated threshold value of the most forward adjustment position. "Yes" indicates that the driver's seat is positioned within a designated threshold value of the most forward adjustment position. For all other adjustment positions, "No" is displayed. This data will not be available if the seat track position switch is not installed in the vehicle.
- "Occupant Size Classification, Right Front Passenger, Child (Yes/No)" indicates whether or not the right front passenger is classified as a child (as defined in 49 CFR part 572, subpart N or smaller). This data will not be available for all vehicles.

Hexadecimal Data:

All data that has been specified for retrieval is shown in the Hexadecimal Data section of this report. However, the Hexadecimal Data section may contain data that is not translated by the CDR tool.

Data Sources:

- Crash data is measured internally in the ACU.
- Pre-crash data is not measured internally in the ACU, but is transmitted from other control units through the Controller Area Network (CAN).
- Pre-crash data and crash data are asynchronous.

0701_Nissan001_r005

DTCs at Time of Retrieval

DTC	Status	Description
B1422	Current	SIDE COLLISION DETECTION
B1425	Current	REAR COLLISION DETECTION
U1000	Current	(CAN COMMUNICATION FAILER)
B1431	Current	FRONT PRE-TEN RH CIRCUIT [OPEN]
B0028	Current	SIDE AIRBAG MODULE RH CIRCUIT [OPEN]
B0021	Current	CURTAIN AIRBAG MODULE LH CIRCUIT [OPEN]
B0029	Current	CURTAIN AIRBAG MODULE RH CIRCUIT [OPEN]
B00A0	Past	OCCUPANT DETECTION SENSOR [POWER FAIL]
B1425	Past	REAR COLLISION DETECTION
B1422	Past	SIDE COLLISION DETECTION

System Status at Event (Event Record 1)

Life Time Counter (sec)	2043511
Complete File Recorded (Yes/No)	Yes (Complete)
Ignition Cycle, Crash	2275
Ignition Cycle, Download	2276
Multi-Event, Number of Events (1, 2)	1
Time from Event 1 to 2 (sec)	N/A
Safety Belt Status, Driver	On (Fastened)
Safety Belt Status, Right Front Passenger	On (Fastened)
Frontal Air Bag Warning Lamp (On, Off)	Off
Frontal Air Bag Suppression Switch Status	Off (AS airbag deploy)
Maximum Delta-V, Longitudinal (MPH [km/h])	28 [45]
Time, Maximum Delta-V, Longitudinal (msec)	180
Maximum Delta-V, Lateral (MPH [km/h])	1 [2]
Time, Maximum Delta-V, Lateral (msec)	155
Maximum Acceleration, Longitudinal (g)	21.5
Time, Maximum Acceleration, Longitudinal (msec)	95
Maximum Acceleration, Lateral (g)	-16.5
Time, Maximum Acceleration, Lateral (msec)	67.5

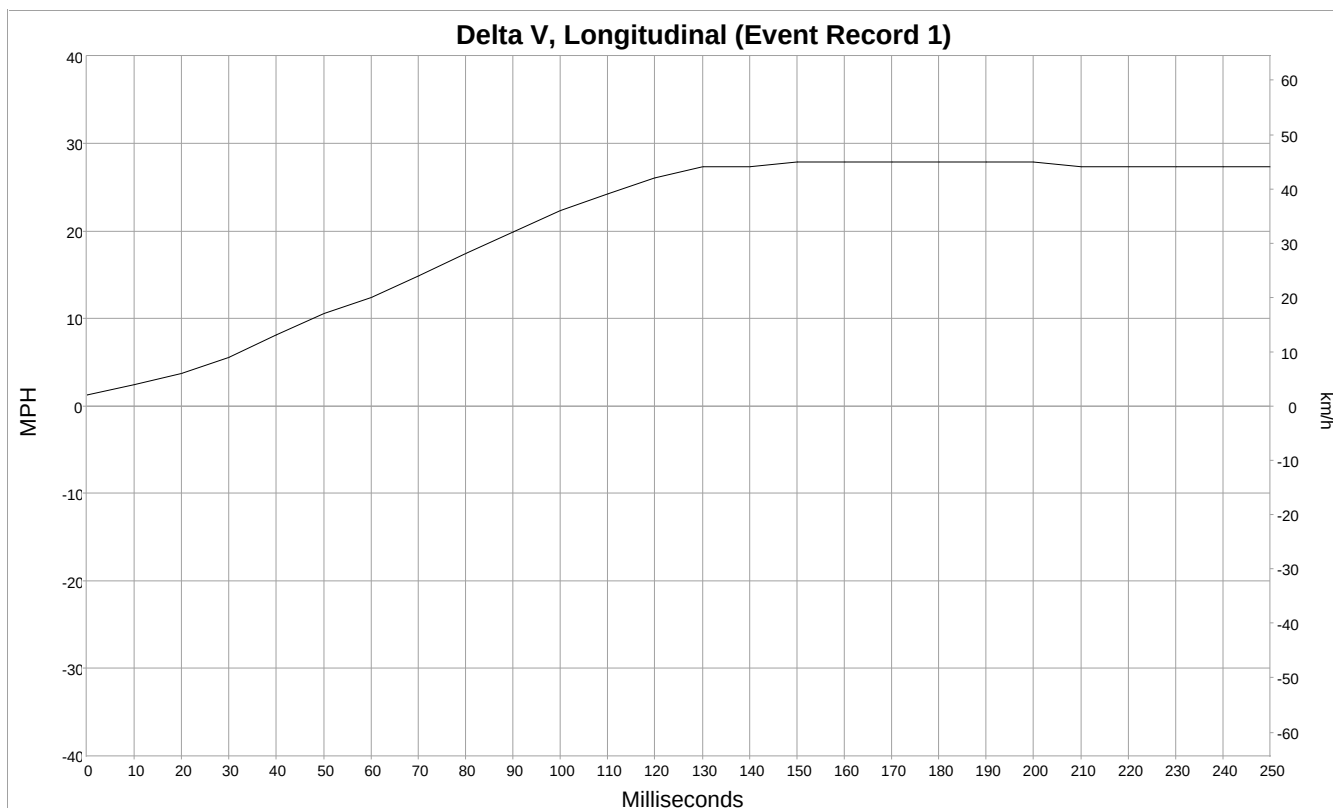
Deployment Command Data (Event Record 1)

Frontal Air Bag Deployment, Time to Deploy/First Stage, Driver (msec)	N/A
Frontal Air Bag Deployment, Time to Deploy/First Stage, Passenger (msec)	N/A
Frontal Air Bag Deployment, Time to 2nd Stage, Driver (msec)	N/A
Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (msec)	N/A
Side Air Bag Deployment, Time to Deploy, Driver (msec)	N/A
Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	85
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec)	N/A
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	85
Pretensioner Deployment, Time to Fire, Driver (msec)	N/A
Pretensioner Deployment, Time to Fire, Right Front Passenger (msec)	85

Pre-Crash Data -5 to 0 sec [2 samples/sec] (Event Record 1)

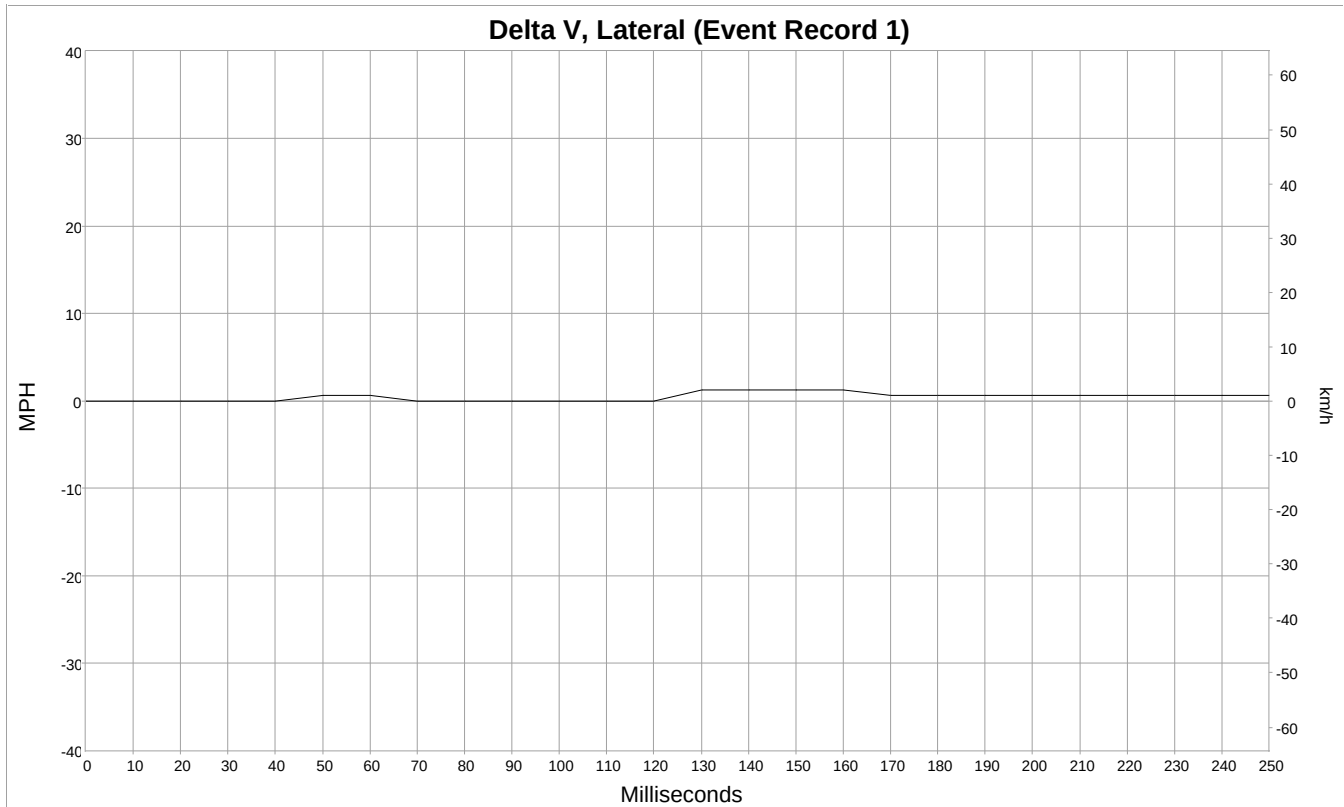
(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % full	Engine RPM	Motor RPM	Service Brake (On, Off)	Steering Input (deg)
-5.0	0 [0]	0	700	0	On (Brake Activated)	-5
-4.5	0 [0]	0	700	0	On (Brake Activated)	-5
-4.0	0 [0]	0	700	0	On (Brake Activated)	-5
-3.5	0 [0]	0	700	0	On (Brake Activated)	-5
-3.0	0 [0]	0	700	0	On (Brake Activated)	-5
-2.5	0 [0]	0	700	0	On (Brake Activated)	-5
-2.0	0 [0]	0	700	0	On (Brake Activated)	-5
-1.5	0 [0]	0	700	0	On (Brake Activated)	-5
-1.0	0 [0]	0	700	0	On (Brake Activated)	-5
-0.5	0 [0]	0	700	0	On (Brake Activated)	-5
0.0	0 [0]	0	700	0	On (Brake Activated)	-5



Longitudinal Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	1 [2]
10	2 [4]
20	4 [6]
30	6 [9]
40	8 [13]
50	11 [17]
60	12 [20]
70	15 [24]
80	17 [28]
90	20 [32]
100	22 [36]
110	24 [39]
120	26 [42]
130	27 [44]
140	27 [44]
150	28 [45]
160	28 [45]
170	28 [45]
180	28 [45]
190	28 [45]
200	28 [45]
210	27 [44]
220	27 [44]
230	27 [44]
240	27 [44]
250	27 [44]



Lateral Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	0 [0]
20	0 [0]
30	0 [0]
40	0 [0]
50	1 [1]
60	1 [1]
70	0 [0]
80	0 [0]
90	0 [0]
100	0 [0]
110	0 [0]
120	0 [0]
130	1 [2]
140	1 [2]
150	1 [2]
160	1 [2]
170	1 [1]
180	1 [1]
190	1 [1]
200	1 [1]
210	1 [1]
220	1 [1]
230	1 [1]
240	1 [1]
250	1 [1]

Hexadecimal Data

```
61 01 00 03 00 94 22 00 94 25 00 D0 00 01 94 31 13 80 28 13 80 21 13 80 29 13 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 14 FF FF FE 20 00 00 00 00

61 02 80 A0 00 FF FF 09 03 00 00 00 00 94 25 00 00 00 01 1E 00 6E AB 01 94 22 00 00 00 01 1E
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61 04 00 00 00 C3 00 00 00 FF FF CC 00 00 00 00 00

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61 1A FE FC FA F7 F3 EF EC E8 E4 E0 DC D9 D6 D4 D4 D3 D3 D3 D3 D3 D4 D4 D4 D4 D4 D3 48 00
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61 1C 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F
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61 1D 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F
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61 1E 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F
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61 83 34 41 54 30 41 07 31 44 32 07 09 02 00 01 00 21 00 06 00 07 32 20 20 83

59 02 09 94 22 00 09 94 25 00 09 D0 00 01 09 94 31 13 09 80 28 13 09 80 21 13 09 80 29 13 09
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59 02 09 80 A0 00 08 94 25 00 09 94 22 00 09

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