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Special Instruction

i08063307

Installation Procedure and Configuration for the Cat® Detect Proximity Awareness System - PL671

SMCS Code: 7606; 7620

Machine Control and Guidance Products CATDETECT-PROXIAWAIV (S/N: PA41-UP)

Table of Contents

Introduction

Table 1

Revision History	
Revision	**Summary of Changes**
05	References added to the General Installation Guidelines section.

This Special Instruction will provide instructions for installing the PL671 module for use in Detect products.

Cat ® Detect Proximity Awareness uses a combination of hardware and software, both onboard (machine) and off board (infrastructure and office) to provide information to the machine operator. The machine sends GPS positions to other machines using a dedicated short range radio and to the office (server) over a wireless radio network. The office then processes all the messages from the individual machines and broadcast the messages out over the wireless radio network. The display processes the messages and calculates machines of interest based on the position of your machines and the machines around you.

Important Safety Information

Do not perform any procedure in this Special Instruction until you have read this Special Instruction and you understand this information. Use only proper tools and observe all precautions that pertain to the use of those tools. Failure to follow these procedures can result in personal injury. The following procedures should also be observed.

Work safely. Most accidents that involve product operation, maintenance, and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs.

A person must be alert to potential hazards. This person should also have the necessary training, skills, and tools in order to perform these functions properly.

Safety precautions and warnings are provided in this instruction and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons. Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard.

Therefore, the warnings in this publication and the warnings that are on the product are not all inclusive. Ensure that any tool, procedure, work method, or operating technique you use that is not recommended by Caterpillar is safe.

Ensure that the product will not be damaged or the product will not be made unsafe by the operation, lubrication, maintenance, or repair procedures used.

⚠ WARNING

Personal injury or death can result when voiding this certification.

Structural damage, an overturn, modification, alteration, or improper repair can impair the Rollover Protective Structure's (ROPS) protection capability thereby voiding this certification.

Do not drill holes in the ROPS. Do not weld on the ROPS unless welding is specified in the procedure. Place welds only at the locations that are specified in the procedure.

To avoid possible weakening of this ROPS, consult a Caterpillar dealer before altering this ROPS in any way. The protection offered by this ROPS will be impaired if it has been subjected to structural damage.

Consult a Caterpillar dealer to determine this structure's limitations without voiding its certification.

⚠ WARNING

Improper operation of an access platform could result in injury or death. Operators must carry out their duties properly and follow all instructions and guidelines given for the machine and access platform.

Machine Specific Warnings

⚠ WARNING

Do not operate or work on this machine unless you have read and understand the instructions and warnings in the Operation and Maintenance Manual. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Caterpillar dealer for replacement manuals. Proper care is your responsibility.

⚠ WARNING

Sudden movement or accidental starting of the machine can cause personal injury or death to persons on or near the machine.

To prevent personal injury or death, perform the following:

Park the machine on a smooth level surface.

Lower the blade and or attachments to the ground.

Stop the engine and engage the parking brake.

Block the wheels and install the steering frame lock.

Turn the battery disconnect switch to the OFF position and remove the key.

Place a Special Instruction, SEHS7332, "Do Not Operate" tag at the battery disconnect switch location to inform personnel that the machine is being worked on.

Weld Specifications and Qualifications

⚠ WARNING

Personal injury or death can result from fumes, gases and ultraviolet rays from the weld arc.

Welding can cause fumes, burn skin and produce ultraviolet rays.

Keep your head out of the fumes. Use ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing area. Wear eye, ear and body protection before working.

Protect yourself and others; read and understand this warning. Fumes and gases can be dangerous to your health. Ultraviolet rays from the weld arc can injure eyes and burn skin. Electric shock can cause death.

Read and understand the manufacturer's instructions and your employer's safety practices. Do not touch live electrical parts.

See "American National Standard Z49.1, Safety in Welding and Cutting" published by the American Welding Society.

American Welding Society
2501 N.W. 7th Street
Miami, Florida 33125

See "OSHA Safety and Health Standards, 29 CFR 1910", available from U.S. Department of Labor.

U.S. Department of Labor
Washington, D.C. 20210

Reference: Special Instruction, REHS1841, "General Welding Procedures" for more welding instructions.

Proper Welding Procedure on Machines and Engines with Electronic Controls

Proper precautions are necessary to prevent damage to electronic controls. When you weld on a machine with electronic controls, use the steps that follow:

1. Turn off the engine. Put the key start switch in the OFF position.
2. If the machine has a battery disconnect switch, open the switch. If the machine does not have a battery disconnect switch, disconnect the negative battery cable at the battery.
3. Connect the ground cable for the welder directly to the actual machine component that will be welded. Attach the clamp for the ground cable as close as possible to the area that is being welded. This connection will reduce the chance of damage from welding current to the components that follow: bearings, hydraulic components, and electrical components.

Note: Do NOT use electrical components as a ground point for the welder. Do NOT use ground points for electronic components as a ground point for the welder.

4. Protect the wiring harnesses from the weld splatter.

Required Parts

Use Table 2 to determine the kits needed for your particular installation.

Table 2

Required Parts				
Machines	**Number of PL671 devices being used**	**New Customer Kits**	**CMPD Upgrade Customer**	**G407 Customer Adding Proximity Awareness**
Large Mining Trucks 785 –797 150 ton class and up	2	523-4399 Wiring Kit	523-4403 Wiring Kit	523-4406 Wiring Kit
Off-Highway Trucks 770 –777 Less than 150 ton class and Articulated Trucks	2	523-4401 Wiring Kit	523-4404 Wiring Kit	523-4407 Wiring Kit
Auxiliary Machines and Support Equipment (Wheel Loaders, Rubber Tire Dozers, Motor Graders)	1	523-4402 Wiring Kit	523-4405 Wiring Kit	523-4408 Wiring Kit
Light Vehicles	1	523-4398 Wiring Kit	X	X
Any Rotational Machine	2	523-4409 Wiring Kit	X	565-0750 Wiring Kit

Large Mining Trucks 785 –797 150 Ton Class and Up New Customer Kits

Contents of the 523-4399 Wiring Kit

Table 3

Contents of the 523-4399 Wiring Kit		
Quantity	**Part Number**	**Description**
1	394-0742	Plate
1	416-9115	Software
1	462-5010	Monitor Kit
1	468-5010	Antenna Mounting Kit
1	489-4251	Wiring Kit
1	519-5020	Wiring Kit
1	523-4400	Antenna Kit

Contents of the 462-5010 Monitor Kit

Table 4

Contents of the 462-5010 Monitor Kit		
Quantity	**Part Number**	**Description**
1	459-2220	Electronic Control Gp
1	517-1039	Monitor Software Gp

Contents of the 468-5010 Antenna Mounting Kit

Table 5

Contents of the 468-5009 Antenna Mounting Kit		
Quantity	**Part Number**	**Description**
1	348-8145	Bracket
1	385-4503	Bracket As
1	385-4505	Bracket As
1	417-6822	Mast As
1	453-1571	Support As
2	453-1573	Plate As
4	158-5052	Half Clamps
4	3K-6060	Locknuts
4	6V-7744	Locknuts
2	7K-4667	U-Bolts
8	7X-7729	Washers
4	8T-0389	Locknuts
4	8T-4195	Bolts
4	8T-4196	Bolts
4	8T-4198	Bolts
16	8T-4896	Hard Washers

Contents of the 489-4251 Wiring Kit

Table 6

Contents of the 489-4251 Wiring Kit		
Quantity	**Part Number**	**Description**
18	3S-2093	Cable Straps
36	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
1	515-4737	Chassis Harness As
16	8T-8737	Seal Plugs
8	169-0705	Seals
4	7R-7951	Plates
2	490-0571	Connector Plug As
12	8T-4138	Bolts
2	490-0578	Connector Plug As
8	9X-8256	Washers
4	492-0394	Supports
4	114-6658	Washers
2	155-2264	Connector Plug As
2	7G-7053	Grommets
8	8T-6974	Bolts

Contents of the 519-5020 Wiring Kit

Table 7

Contents of the 519-5020 Wiring Kit		
Quantity	**Part Number**	**Description**
1	419-5974	Adapter As
1	435-9854	Seal Adapter
1	519-3668	Radio Harness As

Contents of the 523-4400 Antenna Kit

Table 8

Contents of the 523-4400 Antenna Kit		
Quantity	**Part Number**	**Description**
1	372-4806	Antenna
1	424-0877	Cable As
1	516-1632	Cable As

Large Mining Trucks 785 –797 150 Ton Class and Up CMPD Upgrade

Contents of the 523-4403 Wiring Kit

Table 9

Contents of the 523-4403 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	451-2596	Monitor Kit
1	489-4251	Wiring Kit

Contents of the 451-2596 Monitor Kit

Table 10

Contents of the 451-2596 Monitor Kit		
Quantity	**Part Number**	**Description**
4	7K-1181	Cable Straps
1	444-7972	Monitor Harness As
1	459-2220	Electronic Control Gp

Contents of the 489-4251 Wiring Kit

Table 11

Contents of the 489-4251 Wiring Kit		
Quantity	**Part Number**	**Description**
19	3S-2093	Cable Straps
36	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
1	515-4737	Chassis Harness As
16	8T-8737	Seal Plugs
8	169-0705	Seals
4	7R-7951	Plates
2	490-0571	Connector Plug As
12	8T-4138	Bolts
2	490-0578	Connector Plug As
8	9X-8256	Washers

(continued)

(Table 11, contd)

4	492-0394	Supports
4	114-6658	Washers
2	155-2264	Connector Plug As
2	7G-7053	Grommets
8	8T-6974	Bolts

Large Mining Trucks 785 –797 150 Ton Class and Up Adding Proximity Awareness

Contents of the 523-4406 Wiring Kit

Table 12

Contents of the 523-4406 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	489-4251	Wiring Kit

Contents of the 489-4251 Wiring Kit

Table 13

Contents of the 489-4251 Wiring Kit		
Quantity	**Part Number**	**Description**
19	3S-2093	Cable Straps
36	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
1	515-4737	Chassis Harness As
16	8T-8737	Seal Plugs
8	169-0705	Seals
4	7R-7951	Plates
2	490-0571	Connector Plug As
12	8T-4138	Bolts
2	490-0578	Connector Plug As
8	9X-8256	Washers
4	492-0394	Supports
4	114-6658	Washers
2	155-2264	Connector Plug As

(continued)

(Table 13, contd)

2	7G-7053	Grommets
8	8T-6974	Bolts

Off-Highway Trucks 770 –777 Less Than 150 Ton Class and Articulated Trucks New Customer Kits

Contents of the 523-4401 Wiring Kit

Table 14

Contents of the 523-4401 Wiring Kit		
Quantity	**Part Number**	**Description**
1	394-0742	Plate
1	416-9115	Software Chart
1	462-5010	Monitor Kit
1	468-5009	Antenna Mounting Kit
1	515-9377	Wiring Kit
1	519-5020	Wiring Kit
1	523-4400	Antenna Kit

Contents of the 462-5010 Monitor Kit

Table 15

Contents of the 462-5010 Monitor Kit		
Quantity	**Part Number**	**Description**
1	459-2220	Electronic Control Gp
1	517-1039	Monitor Software Gp

Contents of the 468-5009 Antenna Mounting Kit

Table 16

Contents of the 468-5009 Antenna Mounting Kit		
Quantity	**Part Number**	**Description**
1	348-8145	Bracket
1	385-4503	Bracket As
1	385-4505	Bracket As
1	394-0745	Mast As
1	453-1571	Support As
2	453-1573	Plate As
4	158-5052	Half Clamps
4	3K-6060	Locknuts
4	6V-7744	Locknuts

(continued)

(Table 16, contd)

2	7K-4667	U-Bolts
8	7X-7729	Washers
4	8T-0389	Locknuts
4	8T-4195	Bolts
4	8T-4196	Bolts
4	8T-4198	Bolts
16	8T-4896	Hard Washers

Contents of the 515-9377 Wiring Kit

Table 17

Contents of the 515-9377 Wiring Kit		
Quantity	**Part Number**	**Description**
17	3S-2093	Cable Straps
29	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
1	515-5587	Chassis Harness As
16	8T-8737	Seal Plugs
8	169-0705	Seals
4	7R-7951	Plates
2	490-0571	Connector Plug As
4	8T-4138	Bolts
2	490-0578	Connector Plug As
8	9X-8256	Washers
4	492-0394	Supports
4	114-6658	Washers
2	155-2264	Connector Plug As
2	7G-7053	Grommets
8	8T-6974	Bolts

Contents of the 519-5020 Wiring Kit

Table 18

Contents of the 519-5020 Wiring Kit		
Quantity	**Part Number**	**Description**
1	419-5974	Adapter As

(continued)

(Table 18, contd)

1	435-9854	Seal Adapter
1	519-3668	Radio Harness As

Contents of the 523-4400 Antenna Kit

Table 19

Contents of the 523-4400 Antenna Kit		
Quantity	**Part Number**	**Description**
1	372-4806	Antenna
1	424-0877	Cable As
1	516-1632	Cable As

Off-Highway Trucks 770 –777 Less Than 150 Ton Class and Articulated Trucks CMPD Upgrade

Contents of the 523-4404 Wiring Kit

Table 20

Contents of the 523-4404 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	451-2596	Monitor Kit
1	515-9377	Wiring Kit

Contents of the 451-2596 Monitor Kit

Table 21

Contents of the 451-2596 Monitor Kit		
Quantity	**Part Number**	**Description**
4	7K-1181	Cable Straps
1	444-7972	Monitor Harness As
1	459-2220	Electronic Control Gp

Contents of the 515-9377 Wiring Kit

Table 22

Contents of the 515-9377 Wiring Kit		
Quantity	**Part Number**	**Description**
17	3S-2093	Cable Straps
27	7K-1181	Cable Straps
8	196-4687	Clamps

(continued)

(Table 22, contd)

2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
1	515-5587	Chassis Harness As
16	8T-8737	Seal Plugs
8	169-0705	Seals
4	7R-7951	Plates
2	490-0571	Connector Plug As
12	8T-4138	Bolts
2	490-0578	Connector Plug As
8	9X-8256	Washers
4	492-0394	Supports
4	114-6658	Washers
2	155-2264	Connector Plug As
2	7G-7053	Grommets
8	8T-6974	Bolts

Off-Highway Trucks 770 –777 Less Than 150 Ton Class and Articulated Trucks Adding Proximity Awareness

Contents of the 523-4407 Wiring Kit

Table 23

Contents of the 523-4407 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	515-9377	Wiring Kit

Contents of the 515-9377 Wiring Kit

Table 24

Contents of the 515-9377 Wiring Kit		
Quantity	**Part Number**	**Description**
17	3S-2093	Cable Straps
27	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As

(continued)

(Table 24, contd)

1	489-4247	Cab Harness As
2	505-4338	Bracket As
1	515-5587	Chassis Harness As
16	8T-8737	Seal Plugs
8	169-0705	Seals
4	7R-7951	Plates
2	490-0571	Connector Plug As
12	8T-4138	Bolts
2	490-0578	Connector Plug As
8	9X-8256	Washers
4	492-0394	Supports
4	114-6658	Washers
2	155-2264	Connector Plug As
2	7G-7053	Grommets
8	8T-6974	Bolts

Auxiliary Machines and Support Equipment (Wheel Loaders, Rubber Tire Dozers, Motor Graders) New Customer Kits

Contents of the 523-4402 Wiring Kit

Table 25

Contents of the 523-4402 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	426-5010	Bracket As
1	516-9764	Wiring Kit
1	519-5020	Wiring Kit

Contents of the 462-5010 Monitor Kit

Table 26

Contents of the 462-5010 Monitor Kit		
Quantity	**Part Number**	**Description**
1	459-2220	Electronic Control Gp
1	517-1039	Monitor Software Gp

Contents of the 516-9764 Wiring Kit

Table 27

Contents of the 516-9764 Wiring Kit		
Quantity	**Part Number**	**Description**
15	3S-2093	Cable Straps
20	7K-1181	Cable Straps
4	196-4687	Clamps
1	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
1	505-4338	Bracket As
8	8T-8737	Seal Plugs
4	169-0705	Seals
1	374-7467	Seal Cap
2	7R-7951	Plates
4	8T-6974	Bolts
6	8T-4138	Bolts
1	490-0571	Connector Plug As
4	9X-8256	Washers
1	490-0578	Connector Plug As
2	492-0394	Supports
2	114-6658	Washers
1	155-2264	Connector Plug As
2	7G-7053	Grommets

Contents of the 519-5020 Wiring Kit

Table 28

Contents of the 519-5020 Wiring Kit		
Quantity	**Part Number**	**Description**
1	419-5974	Adapter As
1	435-9854	Seal Adapter
1	519-3668	Radio Harness As

Auxiliary Machines and Support Equipment (Wheel Loaders, Rubber Tire Dozers, Motor Graders) CMPD Upgrade

Contents of the 523-4405 Wiring Kit

Table 29

Contents of the 523-4405 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	451-2596	Monitor Kit
1	516-9764	Wiring Kit

Contents of the 451-2596 Monitor Kit

Table 30

Contents of the 451-2596 Monitor Kit		
Quantity	**Part Number**	**Description**
4	7K-1181	Cable Straps
1	444-7972	Monitor Harness As
1	459-2220	Electronic Control Gp

Contents of the 516-9764 Wiring Kit

Table 31

Contents of the 516-9764 Wiring Kit		
Quantity	**Part Number**	**Description**
15	3S-2093	Cable Straps
20	7K-1181	Cable Straps
4	196-4687	Clamps
1	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
1	505-4338	Bracket As
8	8T-8737	Seal Plugs
4	169-0705	Seals
1	374-7467	Seal Cap
2	7R-7951	Plates
4	8T-6974	Bolts
6	8T-4138	Bolts
1	490-0571	Connector Plug As
4	9X-8256	Washers

(continued)

(Table 31, contd)

1	490-0578	Connector Plug As
2	492-0394	Supports
2	114-6658	Washers
1	155-2264	Connector Plug As
2	7G-7053	Grommets

Auxiliary Machines and Support Equipment (Wheel Loaders, Rubber Tire Dozers, Motor Graders) Adding Proximity Awareness

Contents of the 523-4408 Wiring Kit

Table 32

Contents of the 523-4408 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	516-9764	Wiring Kit

Contents of the 516-9764 Wiring Kit

Table 33

Contents of the 516-9764 Wiring Kit		
Quantity	**Part Number**	**Description**
15	3S-2093	Cable Straps
20	7K-1181	Cable Straps
4	196-4687	Clamps
1	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
1	505-4338	Bracket As
8	8T-8737	Seal Plugs
4	169-0705	Seals
1	374-7467	Seal Cap
2	7R-7951	Plates
4	8T-6974	Bolts
6	8T-4138	Bolts
1	490-0571	Connector Plug As
4	9X-8256	Washers
1	490-0578	Connector Plug As
2	492-0394	Supports

(continued)

(Table 33, contd)

2	114-6658	Washers
1	155-2264	Connector Plug As
2	7G-7053	Grommets

Light Vehicles

Contents of the 523-4398 Wiring Kit

Table 34

Contents of the 523-4398 Wiring Kit		
Quantity	**Part Number**	**Description**
1	7K-1181	Cable Strap
1	416-9115	Software
1	451-3759	Display Mounting Kit
1	462-5010	Monitor Kit
1	518-1142	Power Harness As
1	511-2366	Wiring Kit

Contents of the 451-3759 Display Mounting Kit

Table 35

Contents of the 451-3759 Display Mounting Kit		
Quantity	**Part Number**	**Description**
1	329-2679	Clamp
2	329-2680	Bases
1	329-2682	Bracket As
1	450-0297	Bracket As
4	114-6658	Washers
2	5C-7261	Nuts
4	6V-5683	Bolts
2	8T-4189	Bolts
4	8T-4224	Hard Washers
8	8T-4753	Screws

Contents of the 511-2366 Wiring Kit

Table 36

Contents of the 511-2366 Wiring Kit		
Quantity	**Part Number**	**Description**
8	8T-8737	Seal Plugs
4	169-0705	Seals
1	419-5974	Adapter As
1	462-5010	Monitor Kit

(continued)

(Table 36, contd)

1	490-0571	Connector Plug As
1	490-0578	Connector Plug As
2	492-0394	Supports
1	505-4338	Bracket As
1	509-8032	Control Harness As
1	520-4349	Electronic Control Gp
1	155-2264	Connector Plug As
1	3E-3370	Connector Receptacle As
6	8T-4138	Bolts
2	9X-8256	Washers

Rotational Machine New Customer Kits

Required Parts for Rotational Option 1

Table 37

Required Parts for Rotational Option 1		
Quantity	**Part Number**	**Description**
1	523-4409	Wiring Kit

Contents of the 523-4409 Wiring Kit

Table 38

Contents of the 523-4409 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	451-3759	Display Mounting Kit
1	462-5010	Monitor Kit
1	519-5020	Wiring Kit
2	564-2412	Antenna and Mounting Gp
1	565-0750	Wiring Kit

Contents of the 451-3759 Display Mounting Kit

Table 39

Contents of the 451-3759 Display Mounting Kit		
Quantity	**Part Number**	**Description**
1	329-2679	Clamp
2	329-2680	Bases
1	329-2682	Bracket As

(continued)

(Table 39, contd)

1	450-0297	Bracket As
4	114-6658	Washers
2	5C-7261	Nuts
4	6V-5683	Bolts
2	8T-4189	Bolts
4	8T-4224	Hard Washers
8	8T-4753	Screws

Contents of the 564-2412 Antenna and Mounting Gp

Table 40

Contents of the 564-2412 Antenna and Mounting Gp		
Quantity	**Part Number**	**Description**
1	178-8510	Weld Plate
2	196-4687	Clamps
1	372-4806	Antenna
1	516-1632	Cable As
1	559-0333	Bracket As
2	8T-3844	Bolts

Contents of the 565-0750 Wiring Kit

Table 41

Contents of the 565-0750 Wiring Kit		
Quantity	**Part Number**	**Description**
18	3S-2093	Cable Straps
36	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
16	8T-8737	Seal Plugs
4	114-6658	Washers
2	115-2264	Frame As
4	7R-7951	Plates
4	490-0590	Receptacle Caps
4	8T-4138	Bolts
4	492-0394	Magnets
8	9X-8256	Washers

(continued)

(Table 41, contd)

2	539-0985	Plates
1	565-5135	Wiring Harness
8	6V-8490	Bolts
2	7G-7053	Grommets
8	8T-6974	Bolts

Required Parts for Rotational Option 2

Table 42

Required Parts for Rotational Option 2		
Quantity	**Part Number**	**Description**
1	371-7044	Communication Electronics Gp
1	367-3253	Wiring Harness
1	523-4409	Wiring Kit
2	419-5974	Adapter As
2	382-0995	Communication Cable As

Contents of the 523-4409 Wiring Kit

Table 43

Contents of the 523-4409 Wiring Kit		
Quantity	**Part Number**	**Description**
1	416-9115	Software
1	451-3759	Display Mounting Kit
1	462-5010	Monitor Kit
1	519-5020	Wiring Kit
2	562-2412	Support
1	565-0750	Wiring Kit

Contents of the 451-3759 Display Mounting Kit

Table 44

Contents of the 451-3759 Display Mounting Kit		
Quantity	**Part Number**	**Description**
1	329-2679	Clamp
2	329-2680	Bases
1	329-2682	Bracket As
1	450-0297	Bracket As
4	114-6658	Washers
2	5C-7261	Nuts
4	6V-5683	Bolts

(continued)

(Table 44, contd)

2	8T-4189	Bolts
4	8T-4224	Hard Washers
8	8T-4753	Screws

Contents of the 565-0750 Wiring Kit

Table 45

Contents of the 565-0750 Wiring Kit		
Quantity	**Part Number**	**Description**
18	3S-2093	Cable Straps
36	7K-1181	Cable Straps
8	196-4687	Clamps
2	520-4349	Electronic Control Gp
1	489-4246	Control Harness As
1	489-4247	Cab Harness As
2	505-4338	Bracket As
16	8T-8737	Seal Plugs
4	114-6658	Washers
2	115-2264	Frame As
4	7R-7951	Plates
4	490-0590	Receptacle Caps
4	8T-4138	Bolts
4	492-0394	Magnets
8	9X-8256	Washers
2	539-0985	Plates
1	565-5135	Wiring Harness
8	6V-8490	Bolts
2	7G-7053	Grommets
8	8T-6974	Bolts

System Components and Diagram

Illustration 1 g06148271

G407 Display

Illustration 2 g06148306

GPS Antenna

Illustration 3 g06148308

GPS Mast

Illustration 4 g06148310

PL671 Module

Illustration 5 g06367295

MS352 Optional.

Note: Refer to Systems Operation, "Cat Detect and Cat MineStar System Onboard Configuration for the MS352 Satellite Receiver" UENR4696 for the MS352 configuration.

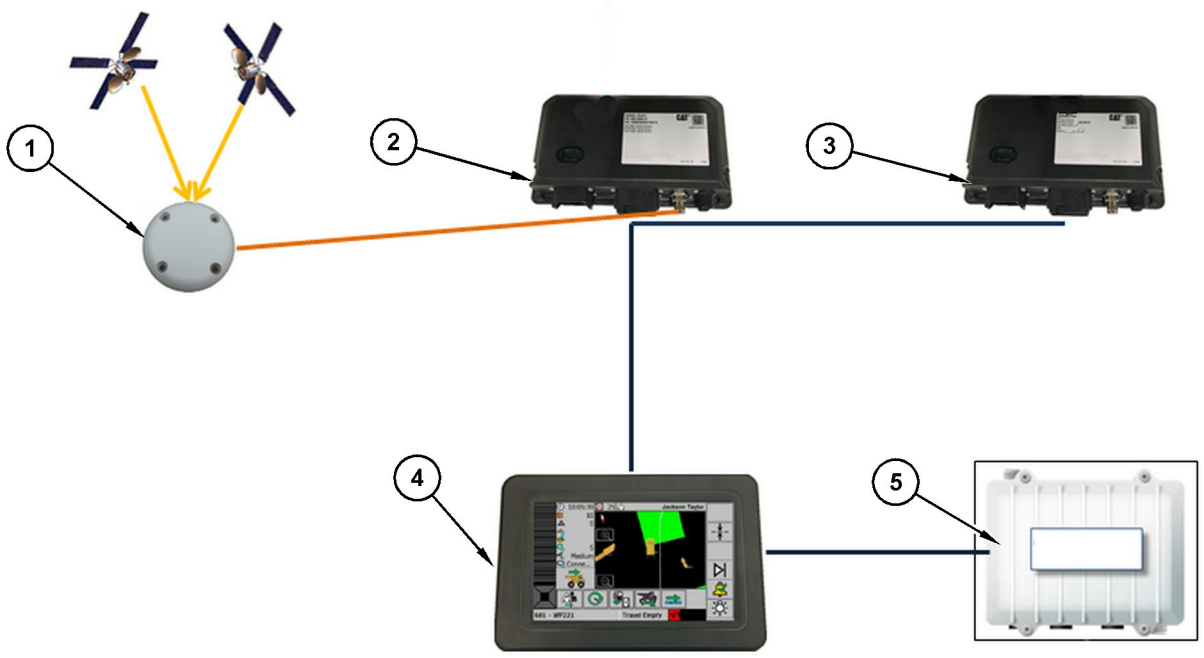

Illustration 6 g06310293

Stand-alone Proximity Awareness System

(1) Antenna
(2) PL671
(3) PL671
(4) MineStar Display
(5) Wifi Radio (Optional)

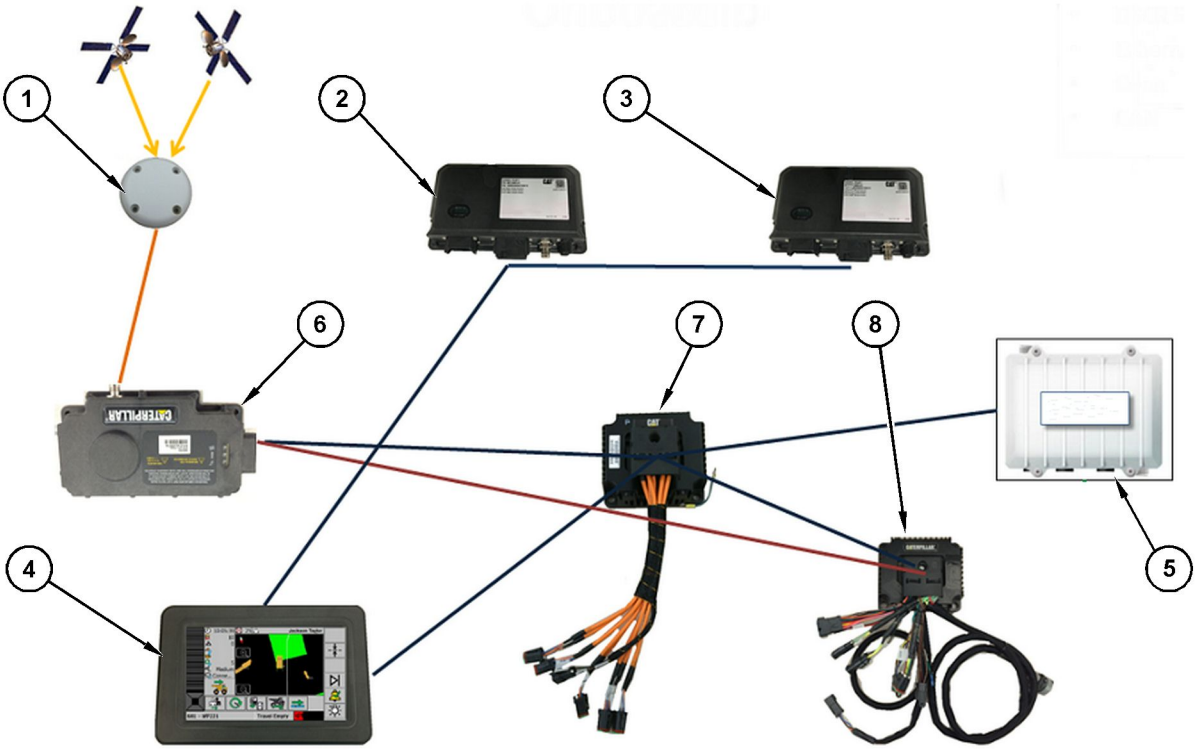

Illustration 7 g06310299

Proximity Awareness System integrated with Fleet

(1) Antenna
(2) PL671
(3) PL671
(4) MineStar Display
(5) Wifi Radio
(6) GPS Receiver
(7) Unmanaged network switch
(8) Health Interface Module

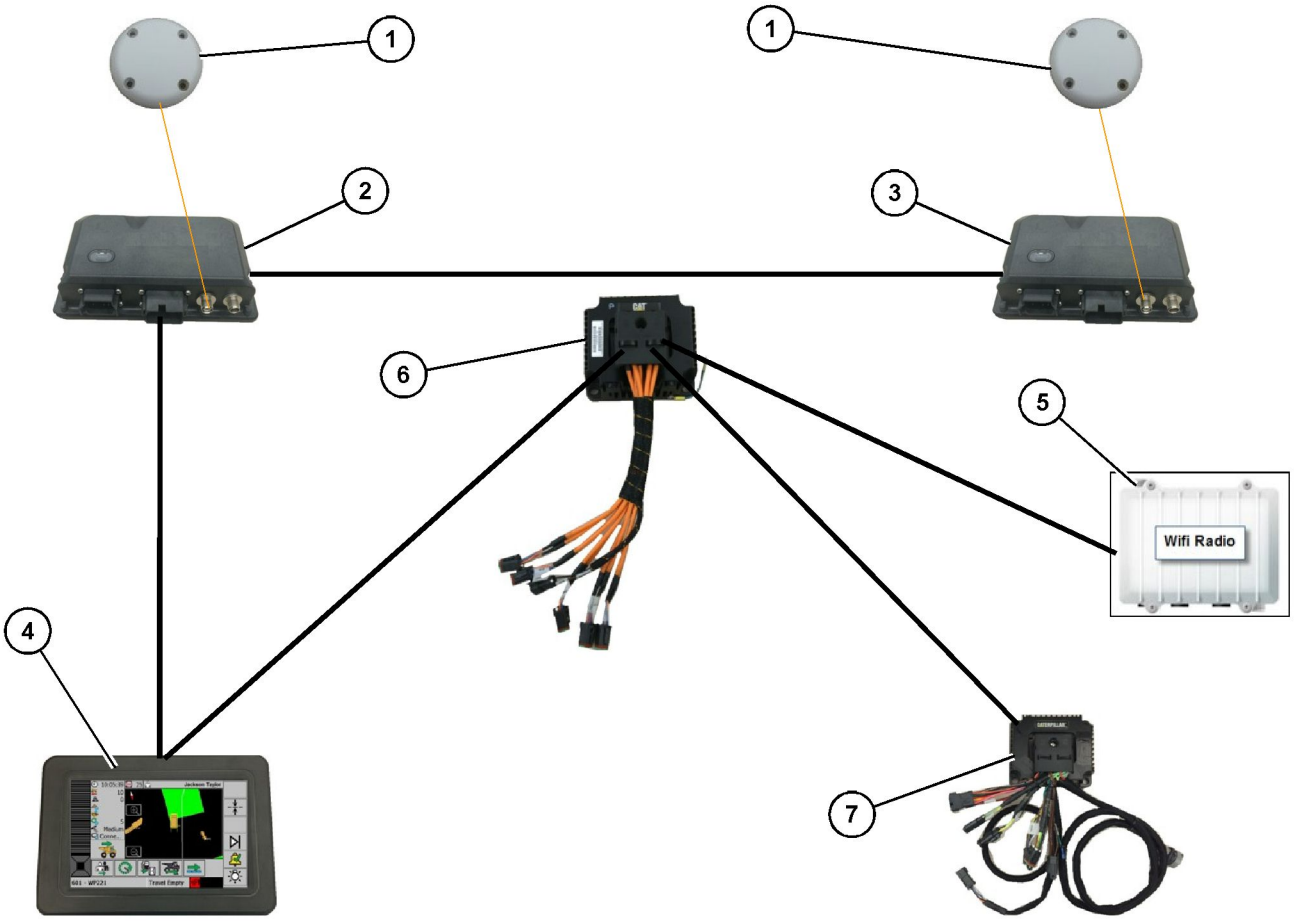

Illustration 8 g06372138

Proximity Awareness Rotational System Integrated with Fleet Option 1

(1) GPS Antenna
(2) Secondary PL671
(3) Primary PL671
(4) MineStar G407 Display
(5) Site Radio
(6) Health Interface Module
(7) Unmanaged network switch

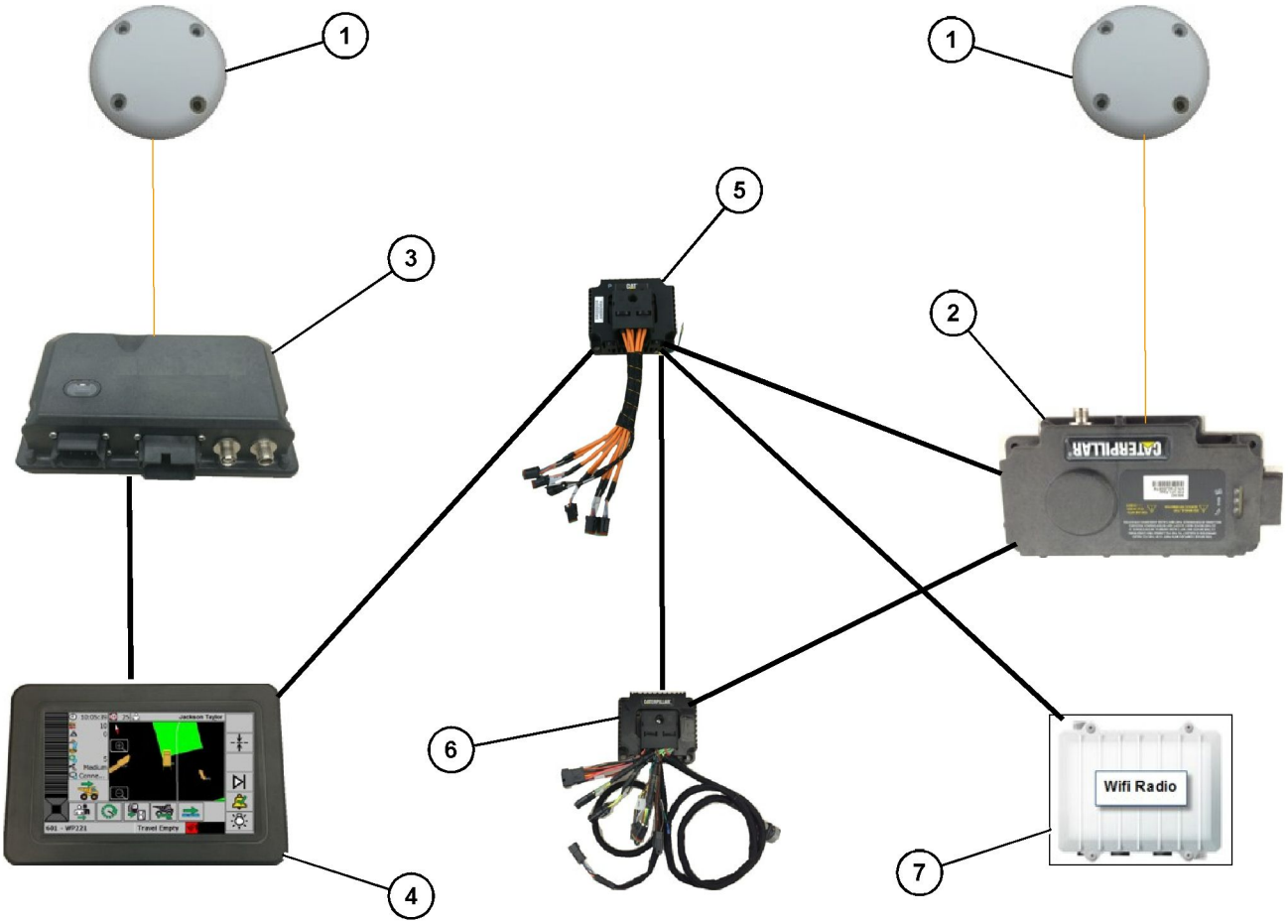

Illustration 9 g06372179

Proximity Awareness Rotational System Integrated with Fleet Option 2

(1) GPS Antenna
(2) MS352
(3) PL671
(4) MineStar G407 Display
(5) Unmanaged network switch
(6) Health Interface Module
(7) Site Radio

Illustration 10 g06307371

Proximity Awareness System Beacon System.

(1) Antenna
(2) PL671
(3) Wifi Radio (Optional)

General Installation Guidelines

This system can be installed onboard in a stand-alone manner or integrated into an existing MineStar Onboard installation. Refer to Illustration 6 and Illustration 7.

Installation and configuration of the following components are not fully covered in this Special Instruction:

- WiFi radio
- Global Navigation Satellite System (GNSS) satellite receiver
- Tope monitor display
- Antenna mast mounting

For more information, reference the following documents:

- Special Instruction, M0065778, "Installation Procedures for the Cat ® MineStar Fleet and Detect Proximity Awareness Onboard System"
- Systems Operation, UENR6985, "Cat ® Fleet Onboard 5.4 Configuration Guide"
- Special Instruction, M0065828, "Procedure for Installing Cat ® MineStar Onboard V5.4 Application Software on Caterpillar Gen 4 Display (G407)"
- Special Instruction, M0086729, "Installation Guide for Product Link™ “Elite” for Mining Applications"

Mounting Location Identification

Identify the location to mount the PL671 Module:

- For Large Trucks such as Large Mining Trucks, Off-Highway Trucks, and Articulated Trucks two modules will be required. The modules should be mounted on opposite sides of the truck, at least 30.48 cm (12 inch) above the walking surface, and behind the side view mirrors. After installation and configuration, coverage of the modules should be verified and documented.

Note: If the cab deck has a large amount of spill rock or debris, place the PL671 unit in front of the mirrors to reduce possible damage.

- For Support Equipment such as Motor Graders, Rubber Tire Dozers, Track Type Tractors, Wheel Loaders, and other construction type machines one module will be required. The module should be mounted on a hand rail or the high point of the machine. After installation and configuration, coverage of the module should be verified and documented.

Avoid mounting the PL671 where it will:

- Interfere with machine accessibility
- Obstruct operator view
- Be subjected to continuous rock or debris strikes
- Not have full visibility to the sky when mounted horizontally

Mounting Orientation

Vertical Mounting

When mounted as a dual PL671 system using an external antenna, the modules must be mounted vertically with the connectors facing downward.

Examples of when to mount vertically using an external antenna:

- Installation on a Large Mining Truck
- Installation on an Off-Highway Truck

- Installation on an Articulated Truck

Horizontal Mounting

When mounted as a single system, the module must be mounted horizontally to allow the internal antenna to have visibility to the sky.

Examples of when to mount horizontally using the internal antenna in a single set-up:

- Wheel Loaders
- Motor Graders
- Rubber Tire Dozers
- Track Type Tractors
- Light Vehicles

Installation of the PL671 System

The installation of the PL671 System on a machine requires the following Steps:

Installation of the Display – This section covers the installation of the display and the display mounting.

Assemble the Components to the Bracket and Mount the Bracket – This section covers the assembly and installation of the PL671 module and associated bracket.

Installation of the Harnesses – Three sections list the installation of the Primary, Secondary, and Display Harness and the power connection of the system. Every machine installation will require the Primary and Display harnesses. The secondary will only be installed on a dual PL671 installations.

Installation of the Display

Display Mounting

The 459 - 2220 Electronic Control Gp can be mounted to various brackets for various machine specific and universal applications.

Large Mining Truck 462 - 2978 Display Mounting Kit Pedestal Mount

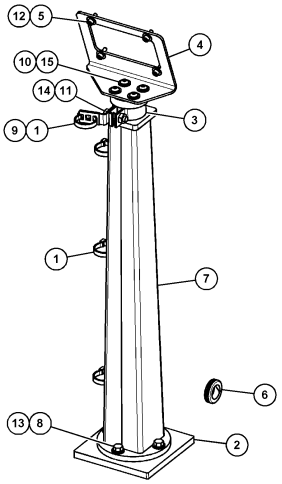

Illustration 11 g06024787

(1) 7K-1181 Cable Strap
(2) 167-8748 Plate
(3) 352-4694 Bracket
(4) 444-7077 Plate
(5) 114-6658 Washer
(6) 2D-0388 Grommet
(7) 348-2163 Pedestal As
(8) 3Y-8100 Bolt
(9) 4P-7429 Clip
(10) 5P-4116 Hard Washer
(11) 5S-7382 Bolt
(12) 6V-5683 Bolt
(13) 8T-4121 Hard Washer
(14) 8T-4896 Hard Washer
(15) 9X-2044 Screw

Large Mining Truck 450 - 5309 Display Mounting Kit Overhead Mount

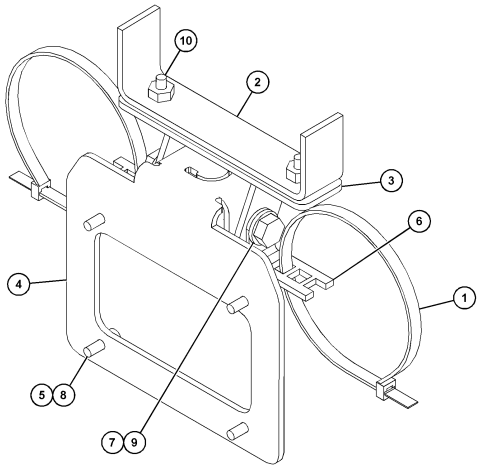

Illustration 12 g06024631

(1) 7K-1181 Cable Strap
(2) 253-9507 Bracket As
(3) 6V-9632 Weld Nut
(4) 398-1744 Bracket As
(5) 114-6658 Washer
(6) 132-5789 Clip
(7) 6V-4248 Bolt
(8) 6V-5683 Bolt
(9) 8T-4121 Hard Washer
(10) 9X-2045 Screw

Large Mining Truck 450 - 5306 Display Mounting Kit Series F Series Overhead Mount

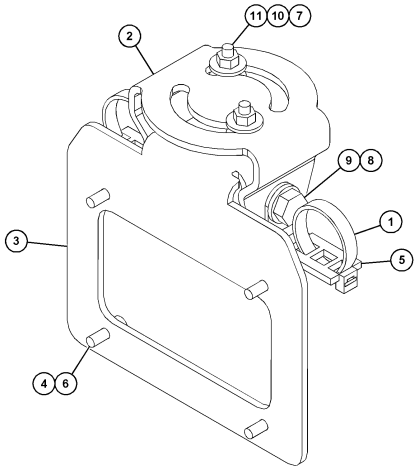

Illustration 13 g06025825

(1) 7K-1181 Cable Strap
(2) 362-1249 Bracket
(3) 398-1744 Bracket As
(4) 114-6658 Washer
(5) 132-5789 Clip
(6) 6V-5683 Bolt
(7) 6V-8225 Nut
(8) 8T-4121 Hard Washer
(9) 8T-4136 Bolt
(10) 9X-2038 Washer
(11) 9X-2045 Screw

Large Mining Truck 450 - 5307 Display Mounting Kit Series F Series Console Mount

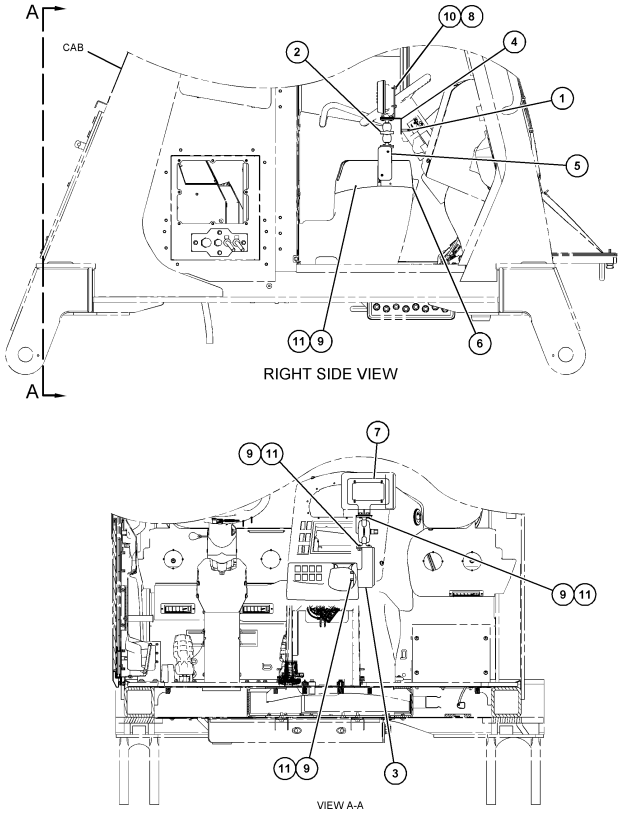

Illustration 14 g06024683

(1) 7K-1181 Cable Strap
(2) 261-3222 Display Mounting Gp
(3) 426-5346 Bracket As
(4) 433-4905 Bracket
(5) 433-4915 Cover
(6) 439-6917 Cover
(7) 444-7076 Bracket As
(8) 114-6658 Washer
(9) 166-3777 Screw
(10) 6V-5683 Bolt
(11) 9X-8256 Washer

Large Mining Truck 450 - 5310 Display Mounting Kit Legacy Console Mount

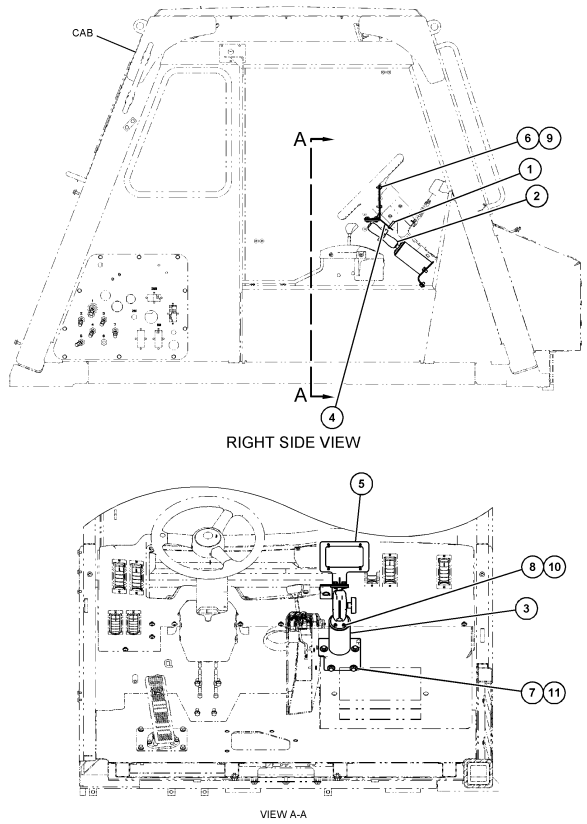

Illustration 15 g06024808

(1) 7K-1181 Cable Strap
(2) 300-3582 Mounting Bracket Gp
(3) 426-4883 Mounting
(4) 434-6219 Bracket
(5) 444-7076 Bracket As
(6) 114-6658 Washer
(7) 0T-0102 Bolt
(8) 335-4416 Screw
(9) 6V-5683 Bolt
(10) 8T-0328 Hard Washer
(11) 9N-0869 Hard Washer

Small Off Highway Truck 450 - 5305 Display Mounting Kit Overhead Mount

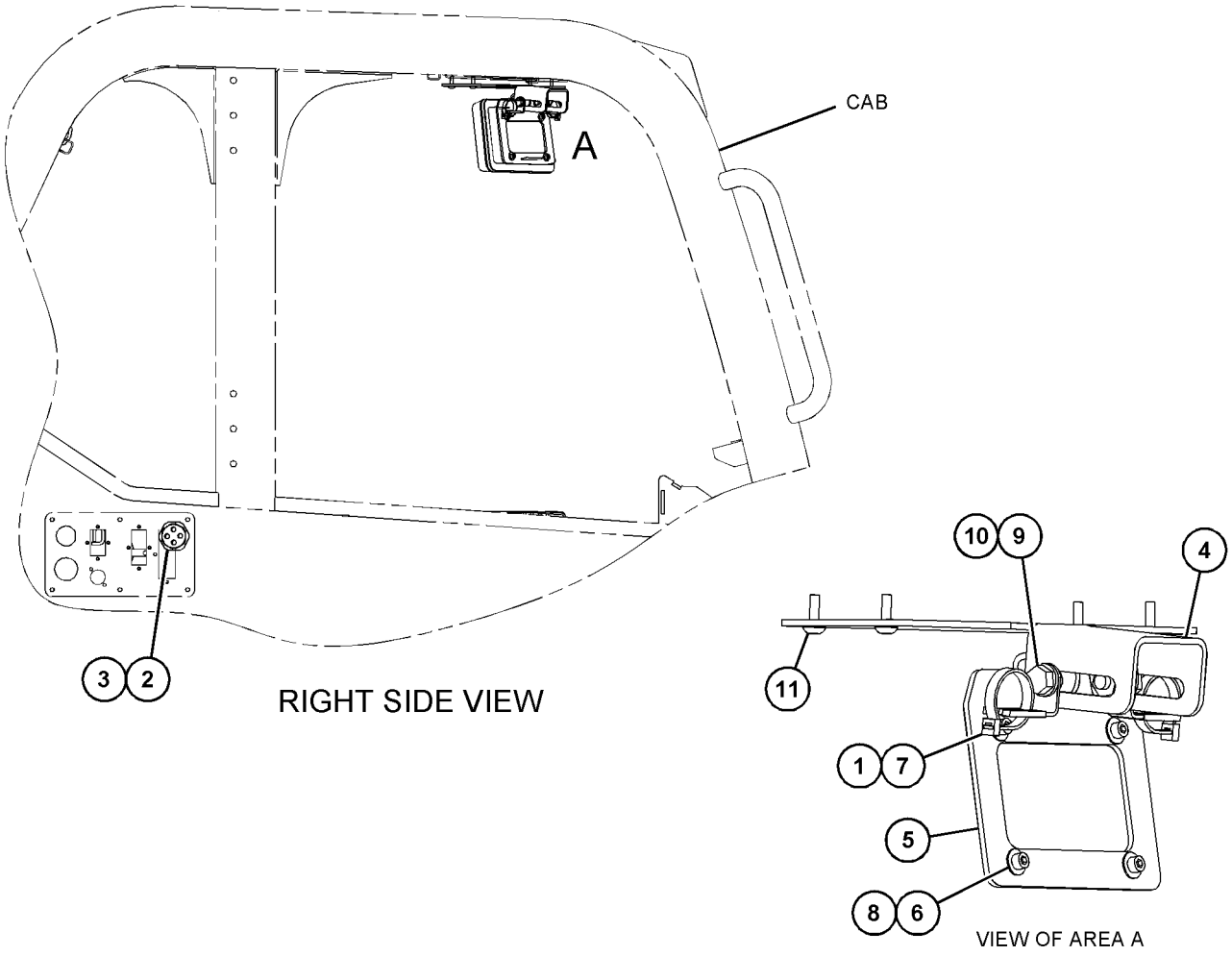

Illustration 16 g06024713

(1) 7K-1181 Cable Strap
(2) 315-5391 Nut
(3) 348-9226 Grommet Assembly
(4) 360-0168 Bracket
(5) 398-1744 Bracket As
(6) 114-6658 Washer
(7) 132-5789 Clip
(8) 6V-5683 Bolt
(9) 8T-4121 Hard Washer
(10) 8T-4136 Bolt
(11) 9X-2045 Screw

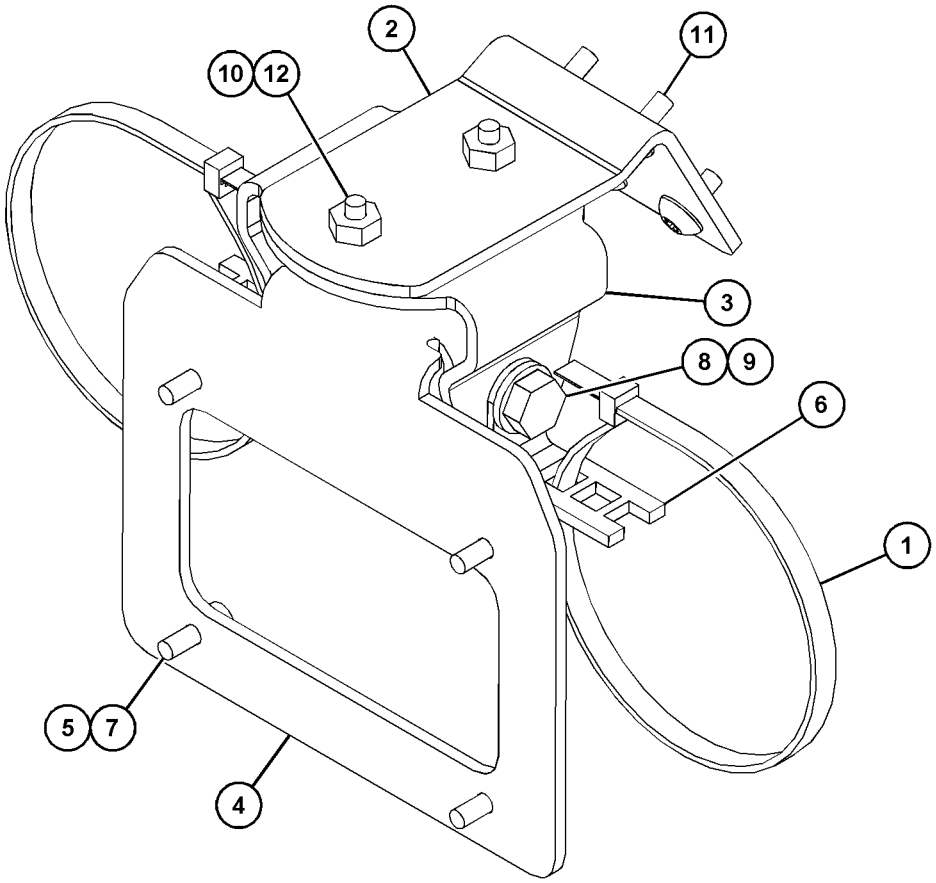

Illustration 17 g06023869

(1) 7K-1181 Cable Strap
(2) 361-2255
(3) 362-1249
(4) 398-1744
(5) 114-6658
(6) 132-5789
(7) 6V-5683
(8) 8T-4121
(9) 8T-4136
(10) 9X-2038
(11) 9X-2043
(12) 9X-2045

Universal 451 - 3759 Display Mounting Kit RAM Mount

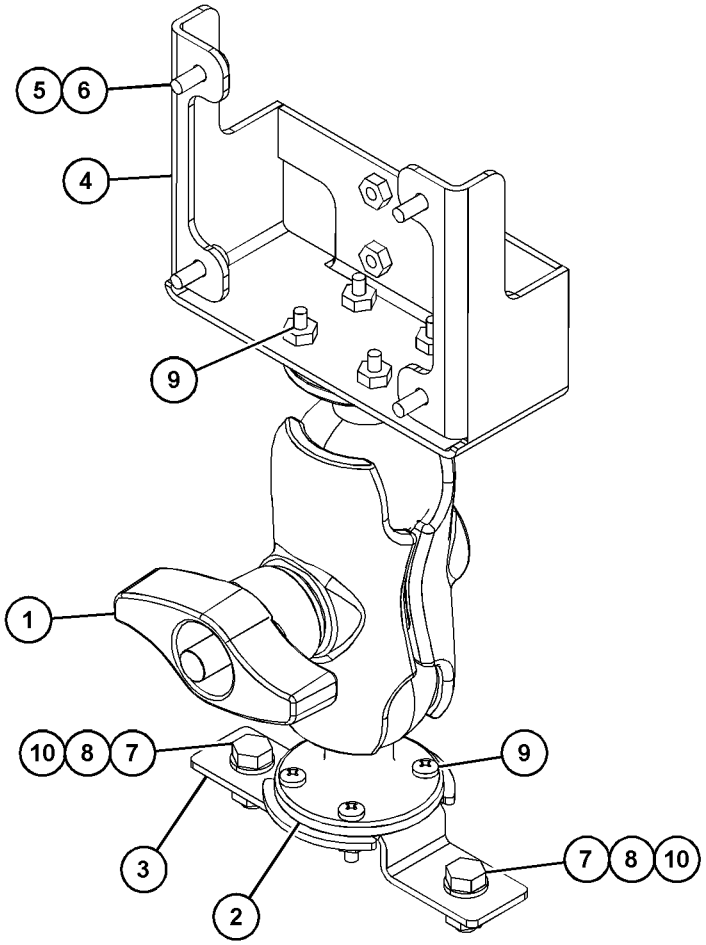

Illustration 18 g06057314

(1) 329-2679
(2) 329-2680
(3) 329-2682
(4) 450-0297
(5) 114-6658
(6) 6V-5683
(7) 8T-4189
(8) 8T-4224
(9) 8T-4753
(10) 5C-7261

Assemble the Components to the Bracket and Mount the Bracket

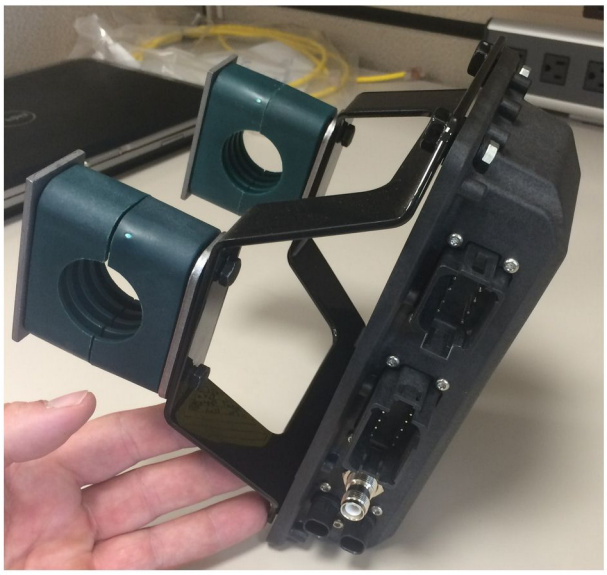

Illustration 19 g06217950

1. Mount the 520-4349 Electronic Control Gp to the 505-4338 Bracket As using four 8T-4138 Bolts and four 9X-8256 Washers.

Note: Repeat this step in installing a dual PL671 System.

2. Mount the assembly from Step 1 to the previously chosen mounting. Use four 196-4687 Clamps. Mount two clamps around the mounting location, insert two 8T-6974 Bolts through a 7R-7951 Plate, and thread the bolts into the 505-4338 Bracket As.

3. Repeat for the second clamp set using the 341-3624 Clips between the two 8T-6974 Bolts and the 7R-7951 Plate to allow the harness to be secured.

Install and Connect the PL671 Harness

The PL671 System for machines can use the following harnesses:

- 489-4246 Control Harness As (Primary PL671 harness)
- 515-4737 Chassis Harness As (Secondary PL671 harness)
- 489-4247 Cab Harness As (Display to PL671 harness)
- 519-3668 Radio Harness As (Power and Radio harness)

Installation of the 489-4246 Control Harness As Primary Harness

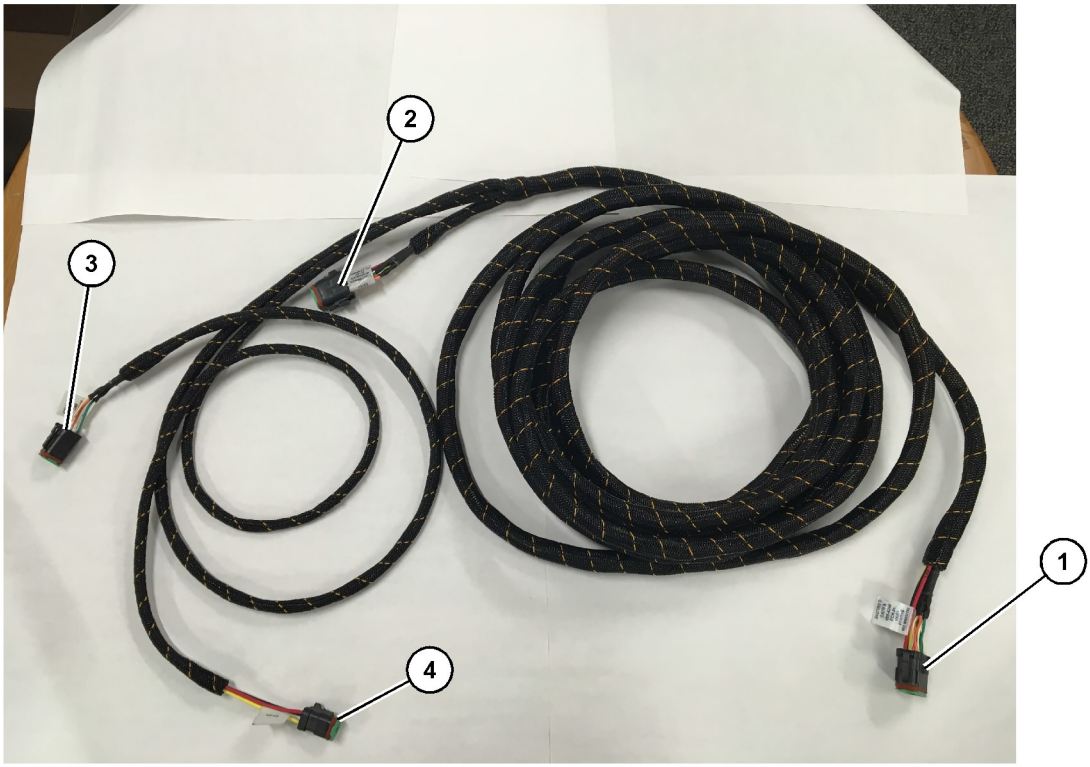

Illustration 20 g06186953

489-4246 Control Harness As

(1) PL671 connection
(2) Secondary PL671 harness connection
(3) Ethernet connection to display harness
(4) Power connection from display harness

1. Connect the 12-pin connector “CV-C16” to the PL671 module.

2. Secure the harness to the ladder clip using a 7K-1181 Cable Strap allowing at least 100 mm (3.94 inch) of strain relief for servicing.

3. Route the opposite harness end towards the cab and chassis connection interface. Follow harness routing guidelines and best practices when routing harnesses.

4. Pass the three-pin “CV-C3” and the six-pin “CV-C1” connectors into the machine electronics bay. The connections to the display harness will be made in this area.

5. The eight-pin “CV-C2” connector can be routed to the electronics bay or left at the chassis for connection to the secondary harness.

6. After routing the harness, secure it using the 7K-1181 Cable Straps provided. Follow harness routing guidelines and best practices when routing harnesses.

Installation of the 515-4737 Chassis Harness As Secondary Harness

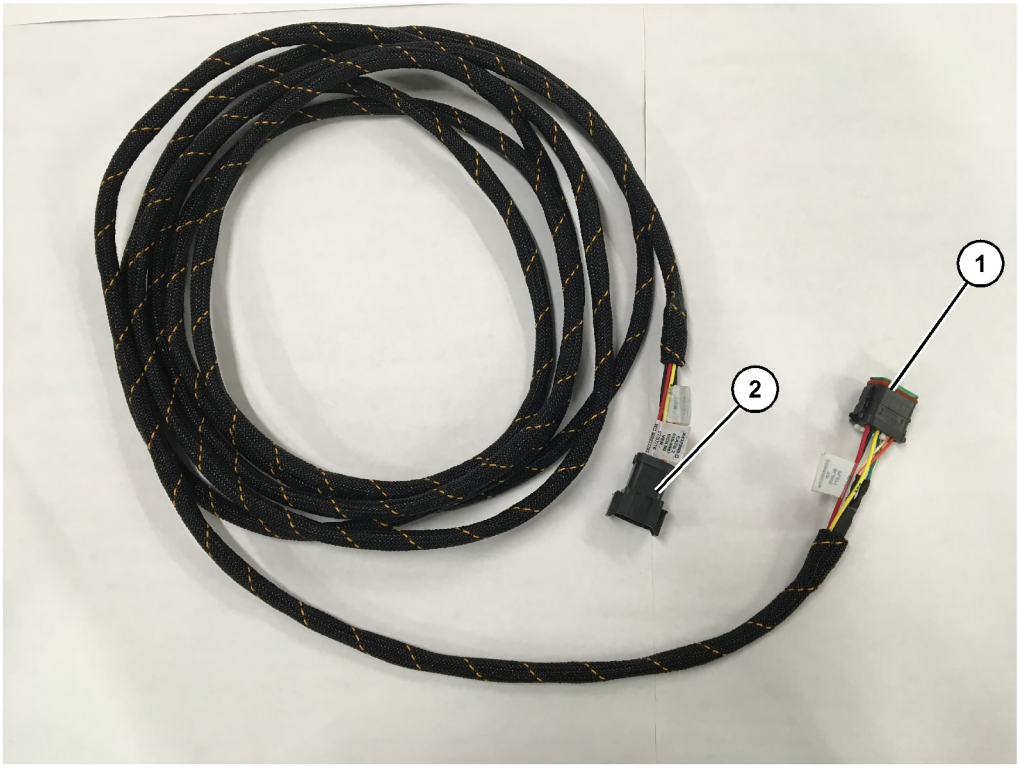

Illustration 21 g06186969

515-4737 Chassis Harness As

(1) PL671 connection (2) Primary PL671 harness connection

1. Connect the 12-pin connector “AC-C2” to the PL671 module.
2. Secure the harness to the ladder clip using a 7K-1181 Cable Strap. Allow at least 100 mm (3.94 inch) of strain relief for servicing.
3. Route the opposite harness end towards the cab and chassis connection interface. Follow harness routing guidelines and best practices when routing harnesses.
4. The eight-pin “AC-C1” connector can be routed to the connection to the secondary harness in either the electronics bay or chassis.
5. Make the connection to the 489-4246 Control Harness As (primary harness) eight-pin connector.
6. After routing the harness, secure it using 7K-1181 Cable Straps. Follow harness routing guidelines and best practices when routing harnesses.

Install and Connect the 489-4247 Cab Harness As Display Harness

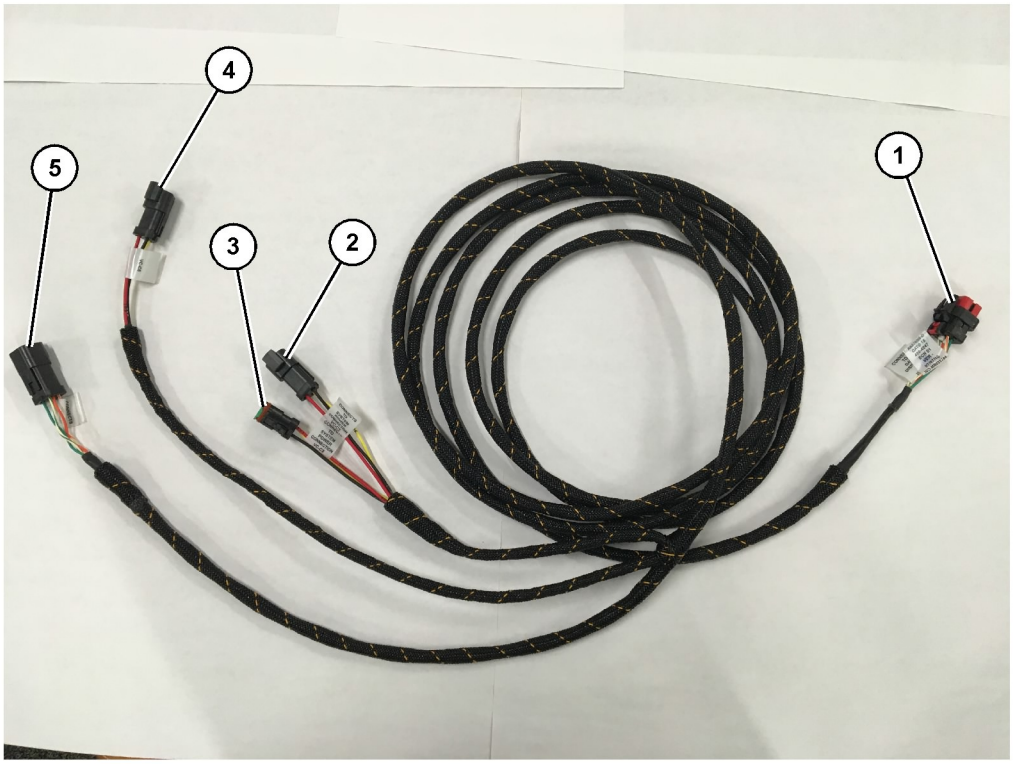

Illustration 22 g06187064

489-4247 Cab Harness As

(1) Display Ethernet connection
(2) Power IN
(3) Power OUT
(4) Power to PL671 Modules
(5) Ethernet connection to primary PL671 module

1. Remove the cab components that are needed to access the routing for the display harness. Typically the headliner and access panels need removed.
2. Connect the six-pin “VC-C1” connector to the displays “Ethernet 2” connection.
3. Route the remainder of the harness toward the electronics bay. Follow harness routing guidelines and best practices when routing harnesses. The connections to the display harness will be made in the electronics bay.
4. Connect the six pin “VC-C5” connector and three pin “VC-C4” of the display harness to the primary PL671 489-4246 Control Harness As six pin “CV-C1” and three pin “CV-C3” connectors.
5. If the machine has a Fleet Onboard system previously installed, identify the 343-8444 Power Cable and disconnect the “H-C1” connector.
6. Connect the “H-C1” plug into the 489-4247 Cab Harness As “VC-C3” connection.
7. Connect the “VC-C2” connection to the receptacle that the “H-C1” was removed from.
8. If the display has power and Ethernet connection through another system installation, the components and panels previously removed can be reinstalled. If the display requires power and Ethernet connection, proceed to the installation of the Display Power and Ethernet Harness.

Install the 519-3668 Radio Harness As Display Power and Ethernet Harness

1. With the removed cab components connect the six-pin “NC-C1” connector to the display “Ethernet 1” connection.
2. Connect the “NC-C2” connector to the display power connector.
3. Route the remainder of the harness towards the electronics bay. Follow harness routing guidelines and best practices when routing harnesses. The connections to the customer radio harness and machine power will be made in the electronics bay.
4. The unfinished end of the 519-3668 Radio Harness As will be used for the power connection. Apply three 8T-8729 Connector Pins and a 102-8803 Receptacle Kit to the unfinished end of the 519-3668 Radio Harness As. The wire location should be:

A Position – 109-RD(Red)Unswitched Power

B Position – 229-BK(Black)Ground

C Position – 308-YL(Yellow)Switched Power

5. Connect the 102-8803 Receptacle Kit to the “VC-C2” connection of the 489-4247 Cab Harness As.

6. The connection to the customer radio will be made by installing the 419-5974 Adapter As on the 519-3668 Radio Harness As six-pin “N-C2” connector. This will allow for a RJ45 connection from the customer data radio to the419-5974 Adapter As. The 435-9854 Seal Adapter can be applied to an unfinished end of the CAT 5 or greater rated cable prior to applying a RJ45 end.

Installation Procedure for the Rotational Configuration with Two PL671 Modules

Connecting the Stand Alone PL671 Harness to the G407 Display

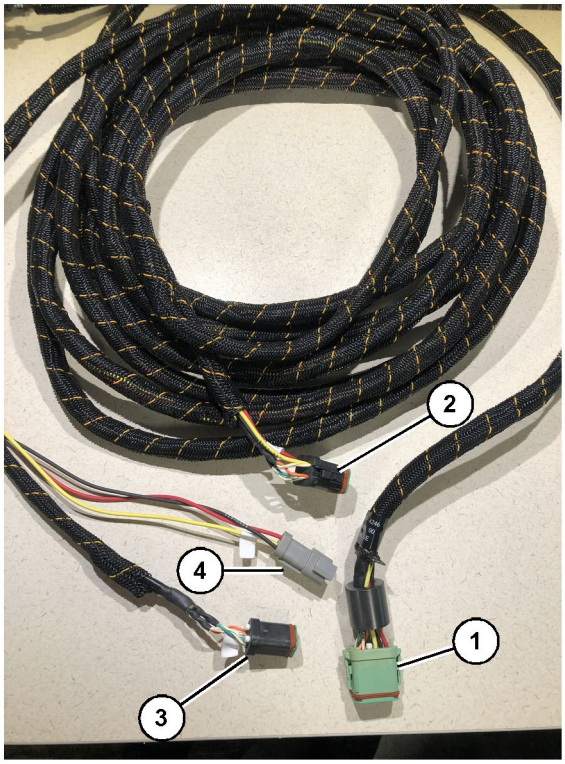

Illustration 23 g06373473

489-4246 Control Harness As

(1) Primary PL671 connection
(2) Secondary PL671 connection
(3) Ethernet connection to the display harness
(4) Power connection from the display harness

Illustration 24 g06373481

565-5135 Wiring Harness

(1) PL671 connection
(2) Primary PL671 harness connection

1. Connect the 12-Pin connector of the 489-4246 Control Harness As to the stand-alone PL671.

2. Connect the “AC-C1” connector of the 489-4246 Control Harness As to the “CV-C2” connection socket on the 565-5135 Wiring Harness.

3. Connect the “Slave” connector on the 565-5135 Wiring Harness to the secondary PL671.

4. Connect the six-pin “VC-C1” connector to the displays “Ethernet 2” connection.

5. Connect the “VC-C5” Cab interface connection of the 489-4246 Control Harness As into the “CV-C1” connection socket of the 489-4247 Cab Harness As.

6. Connect the “VC-V4” Cab interface socket of the 489-4246 Control Harness As into the system power connector.

7. Connect the “G407 Ethernet 1” plug into the “ETH 1” port on the G407 Display.

8. Connect the 516-1632 Cable As to both PL671 Modules and the 372-4806 Antenna.

Recommended Mounting Locations for Hydraulic Shovels Setup With Two PL671 Modules

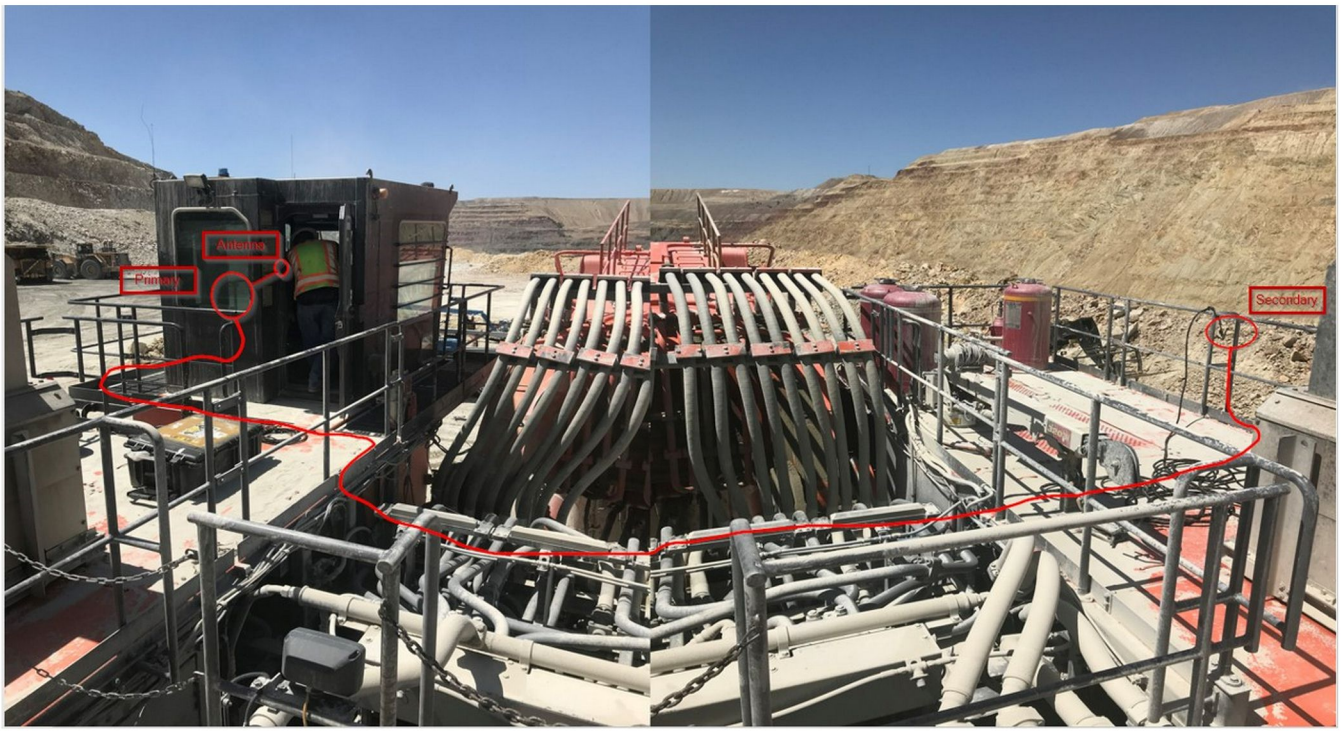

Illustration 25 g06381773

Note: The primary and secondary units should be mounted vertically, using an external antenna and opposite each other on the machine to allow complete coverage and awareness. Keep best installation practices in mind to prevent all tripping hazards.The secondary PL671 unit cable will run along the side of the house next to the foot rails, under the walkway through the house and back up the foot rail to the primary PL671 unit. Attach the coax cable to the antenna. Refer to Illustration 25.

Installation Procedure for the Rotational Configuration with One MS352 and One PL671

Connecting the PL671 and Harness to the G407 Display

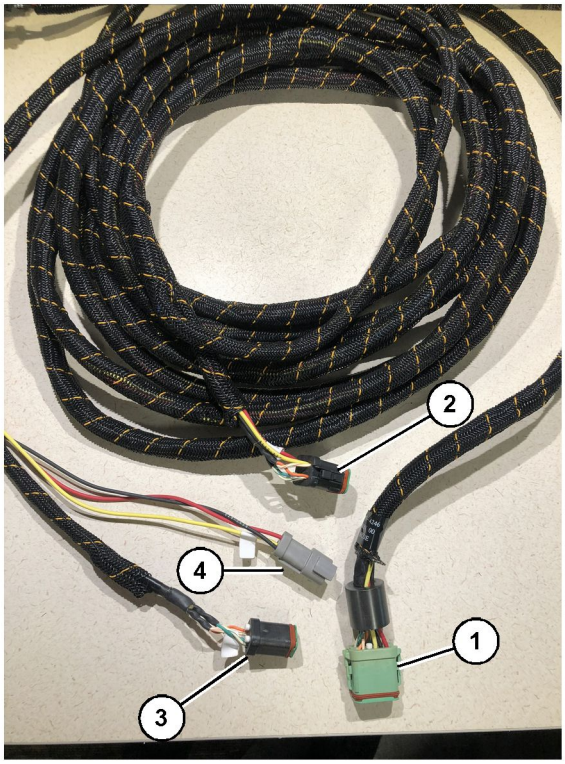

Illustration 26 g06373473

489 - 4246 Control Harness As

(1) Primary PL671 connection
(2) Secondary PL671 connection
(3) Ethernet connection to the display harness
(4) Power connection from the display harness

1. Connect the 12-pin connector of the 489 - 4246 Control Harness As to the PL671.
2. Connect the “VC-C5” Cab interface connection of the 489 - 4246 Control Harness As into the “CV-C1” connection socket of the 489 - 4247 Cab Harness As.
3. Connect the six-pin “VC-C1” connector to the displays “Ethernet 2” connection.
4. Connect the “VC-C4” Cab interface socket of the 489 - 4246 Control Harness As onto the system power connector.
5. Connect the “G407 Ethernet 1” plug into the “Eth 1” port on the G407 Display.
6. Connect the 516 - 1632 Cable As to both PL671 Modules and the 372 - 4806 Antenna.

Connecting the MS352 and Harness

1. Connect the “CAT 4” connector of the 367 - 3253 Wiring Harness to the MS352.
2. Connect the 419 - 5974 RJ-45 Adapter As to the six-pin connection socket on the 367 - 3253 Wiring Harness.
3. Connect the 516 - 1632 Cable As to both the MS352 and the 372 - 4806 Antenna.
4. Connect a Cat 5 or Cat 6 Ethernet cable to both the 419 - 5974 RJ-45 Adapter As and the unmanaged Ethernet switch on the machine.

Installation of the PL671 Module on a Light Vehicle

Mount the Bracket to the Vehicle

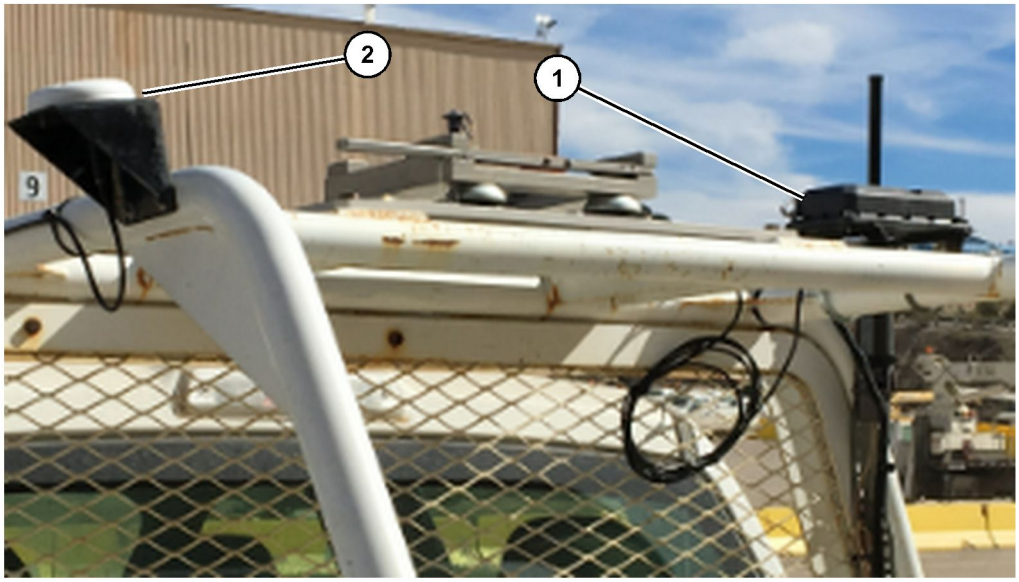

Illustration 27 g06222854

(1) PL671 radio (2) PL671 antenna

1. Select a mounting location for the PL671 and the GPS antenna. The PL671 and antenna must be at least 91.44 cm (36 inch) apart to prevent signal loss. The mounting locations must provide a clear view of the sky for GPS and unobstructed 360 degree broadcast area for the PL671.

2. Mount the 520-4349 Electronic Control Gp to the 505-4338 Bracket As using four 8T-4138 Bolts and four 9X-8256 Washer.

3. Mount the assembly to the mounting location previously selected.

Mount the Display

1. Select a mounting location for the display that meets the site-specific requirements.

2. Assemble the display mounting and mount the display to the bracket.

Install and Connect the PL671 Harness

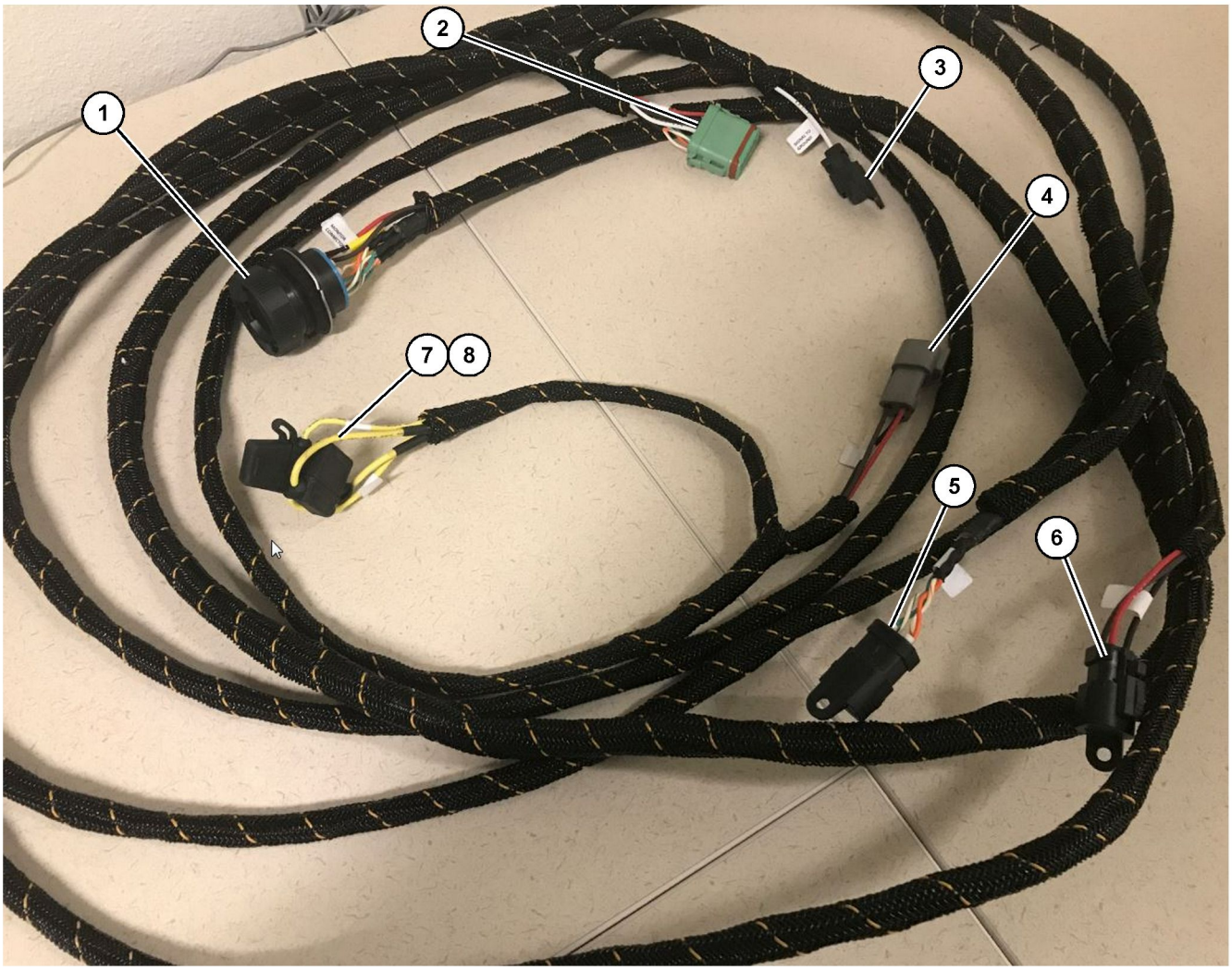

Illustration 28 g06283545

509 - 8032 Control Harness As

Light Vehicle Main Harness

(1) Monitor Connector
(2) GPS Radio Connector
(3) Signal to Ground
(4) Power Connection
(5) Customer Radio Connector
(6) Customer Power
(7) Fuse 1 (+)
(8) Fuse 2 (-)

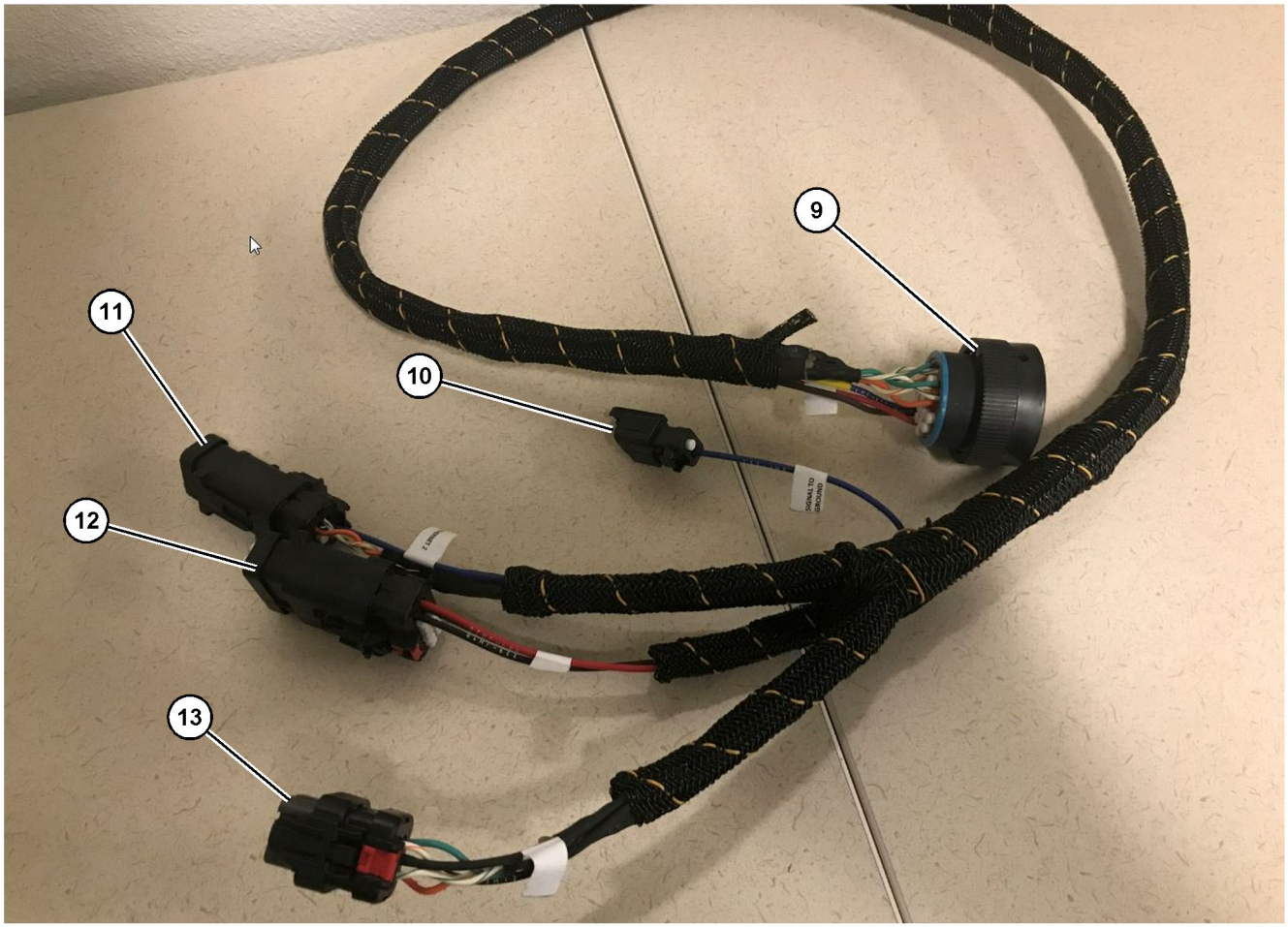

Illustration 29 g06283539

518-1142 Power Harness As

(9) Main Harness Connector
(10) Signal to Ground
(11) Ethernet 2
(12) Display Power
(13) Ethernet 1

Installation of the Harness

1. Connect the 12-pin “GPS Radio Connector” (2) from the 509-8032 Control Harness As to the PL671 module.
2. Route the 509-8032 Control Harness As into the cab of vehicle per site requirements while adhering to harness routing best practices.

Note: The “Signal to Ground” (3) and (10) is an optional connection and configuration. Use site best practices when configuring this option for vehicles. “Signal to Ground” is used as the connection for reverse signal input.

3. Connect the “Customer Radio Connector” (5) from the 509-8032 Control Harness As to aRJ45 adapter, then to the site radio.

Note: Off the same section of the 509-8032 Control Harness As you will find a power connection, refer to the “Power Connections” section for more details.

4. Connect the “Monitor Connector” (1) from the 509-8032 Control Harness As to the “Main Harness Connector” (9) of the 518-1142 Power Harness As.

Note: Off the same section of the 518-1142 you will find a power connection, refer to the “Power Connections” section for more details.

5. Route the 518-1142 Power Harness As to the previously mounted display location.
6. Connect the “Ethernet 2” (11), “Display Power” (12), and “Ethernet 1” (13) from the 518-1142 Power Harness As to the display.

Power Connections

Power connections to harnesses are specific to each vehicle and determined by the dealer or site. Reference https://dealer.cat.com/content/dam/dealer/Products/Technology/Mining%20Technology%20and%20Autonomy/detect/PL671-information-sheet.pdf for more details.

Commissioning the PL671

Power-Up Test

Note: To avoid possible registration issues, do not apply power to the system until all hardware has been installed and all electrical connections are made.

Once the radio has been connected, and the wires from the retrofit harness for battery positive, battery negative, and key switch power have been properly connected to the equipment, turn on the power to the equipment.

Installing the Software on the PL671 Using WinFlash

Note: Flash Files are at https://dealer.cat.com/PL in the “Service Technicians Toolbox” section.

Perform the following procedure to flash the radio. The radio is flashed to upgrade the software. Flash programming of the radio must also be done if the radio has been replaced. The Cat Electronic Technician (Cat ET) contains the program WinFlash. WinFlash is used to load software into the radio. The following procedure is used to flash software into the radio.

1. Connect the laptop to the PL671 using 517-2604 Control Harness As, 419-5974 Adapter As, and a Cat 5 or greater Ethernet cable.

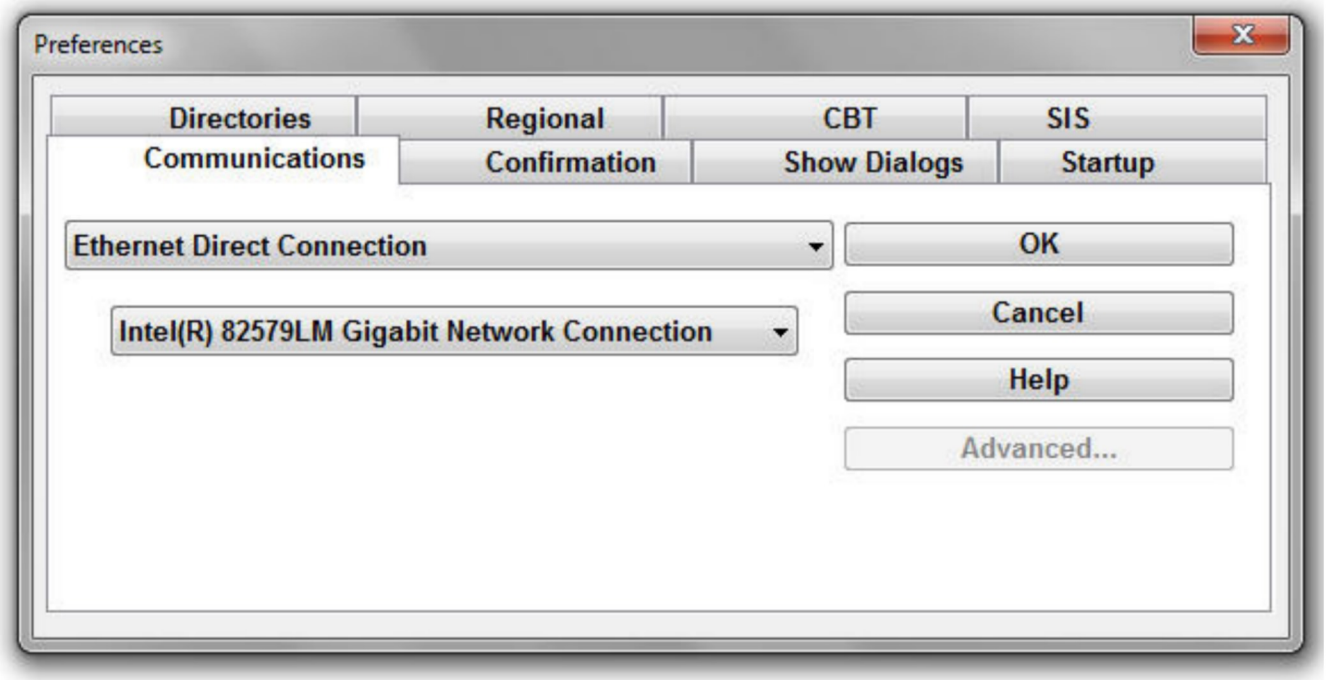

Illustration 30 g03396549

2. Using Cat ET access the PL671 through a "Ethernet Direct Connection" and enter WinFlash.

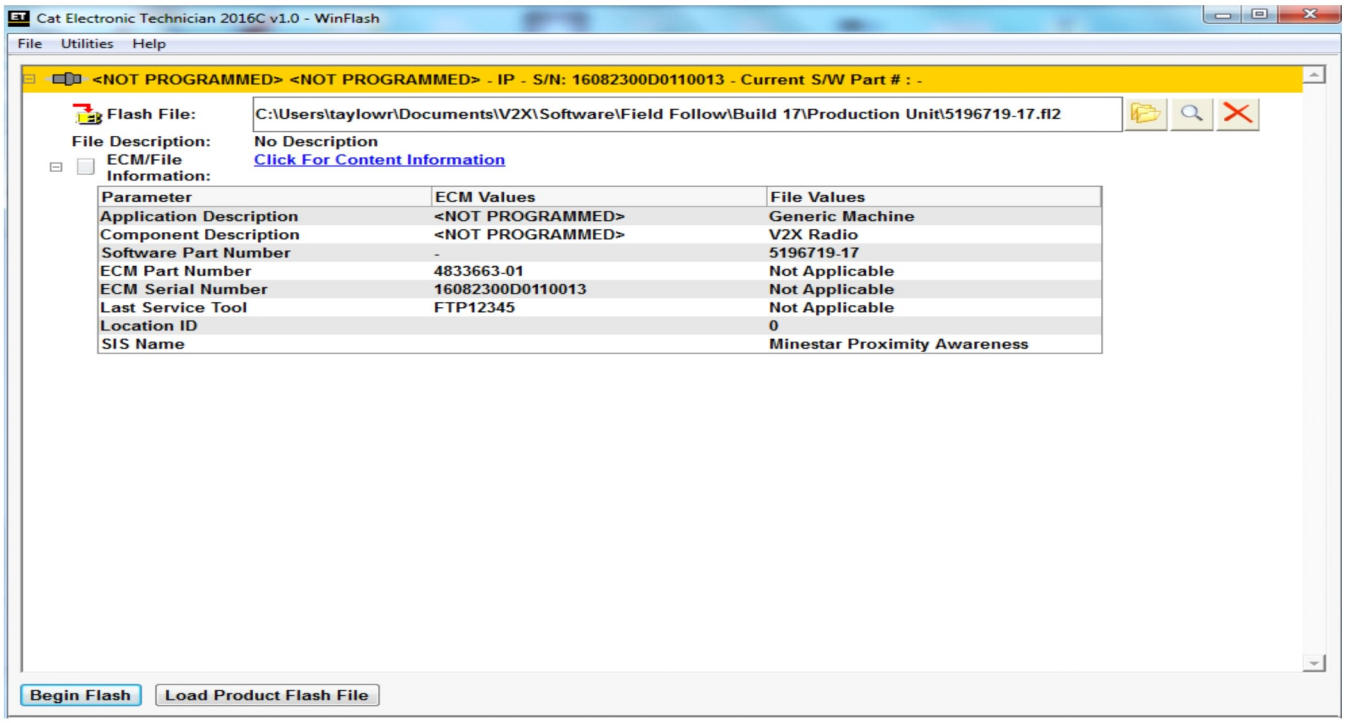

Illustration 31 g06168210

3. Select the appropriate “FL2” file to be loaded onto the PL671 and begin to flash.

Note: The “FL2” file will take up to five minutes and the PL671 will reboot once for application changes.

Note: Do not access the web configuration until after Cat ET indicates that flashing is complete.

Establishing a Connection Between the PL671 and a PC

Note: Change the LAN adapter settings to the following prior to establishing a connection to the PL671.The settings can be accessed by selecting the “Network and Sharing Center” , then “Network Connections” , “Local Area Connection” , “Properties” , “Networking” , and finally select “Internet Protocol” .

IP Address – 10.0.0.xx

Subnet Mask – 255.255.255.0

1. Using the service harness and a Cat 5 or greater Ethernet cable, connect the PL671 to your laptop.

   Turn OFF the wifi switch or disable the wifi on the pc.

2. Disconnect or disable any VPN connections.

3. Open the “Network and Sharing Center” on your pc and ensure that the “Caterpillar Machine Network” connection is enabled.

4. Open a web browser. Google Chrome is preferred.

Illustration 32 g06169139

5. In the address bar type: “10.0.0.10:8000” . The “Web Configuration” home page as shown in Illustration 32 should appear.

Note: If you are unable to connect to the PL671, disconnect and reconnect the Ethernet cable, wait at least 60 seconds for the PC to establish a connection. If communication continues to fail, refer to troubleshooting procedures.

General PL671 Configuration

Configuring the PL671 for Proximity Awareness

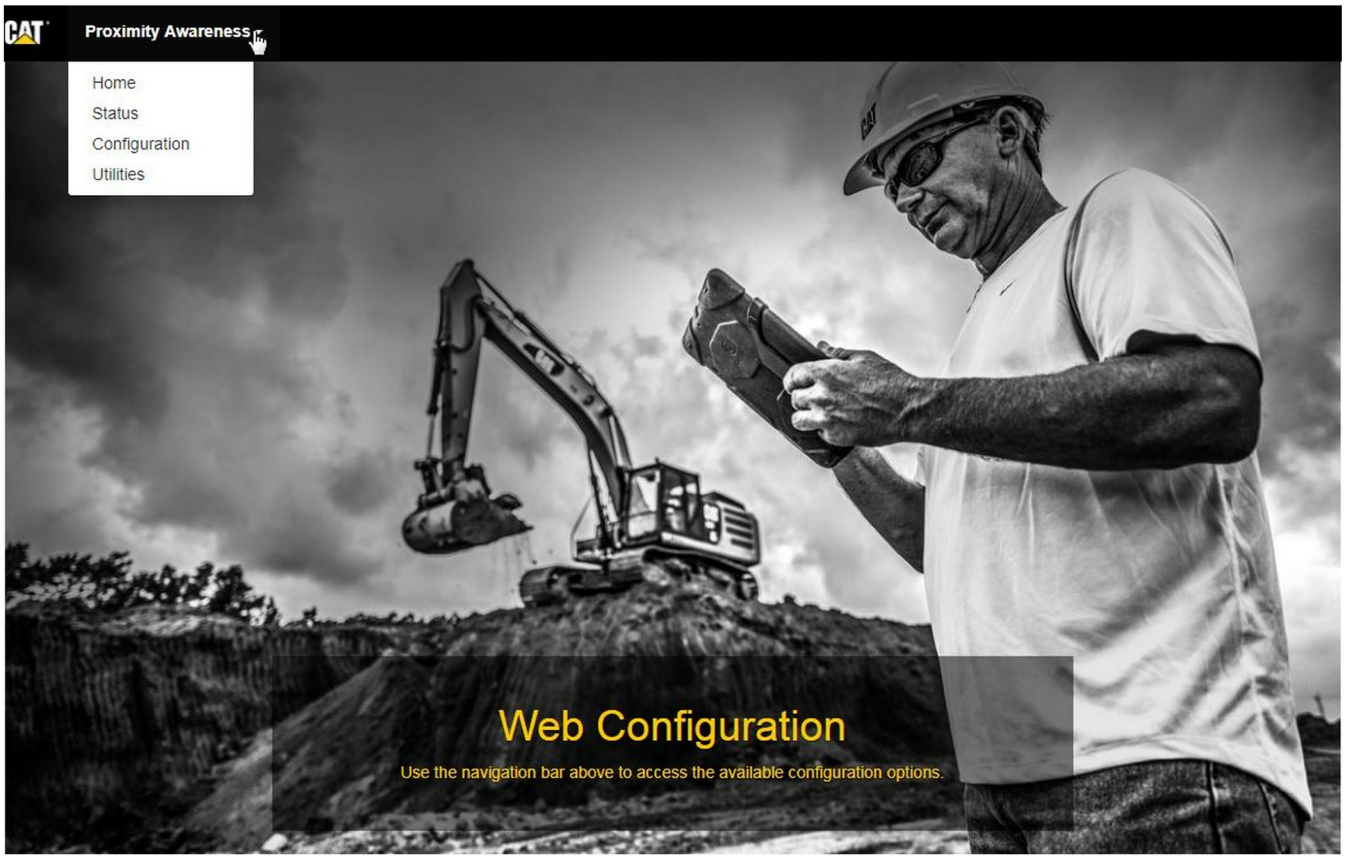

Illustration 33 g06274430

1. From the “Web Configuration” home page, choose the “Configuration” option from the drop-down list.

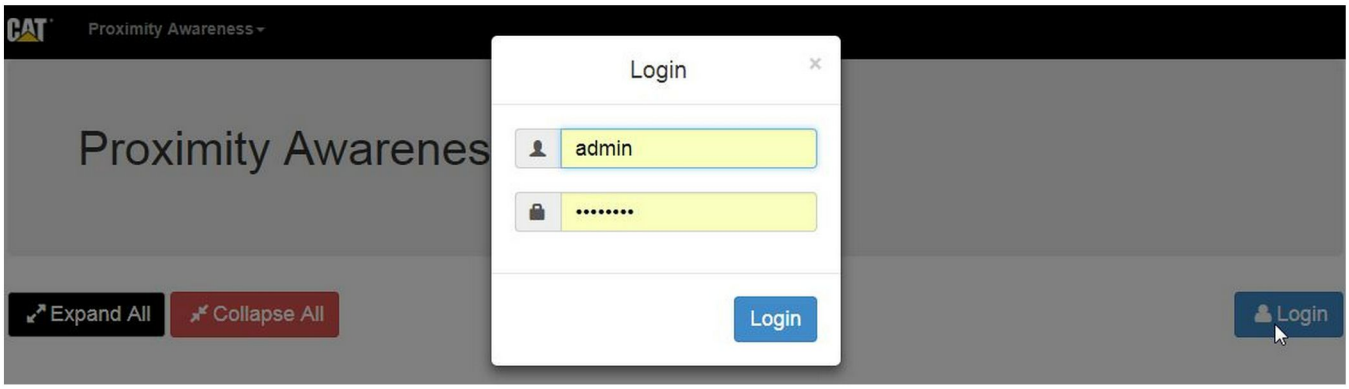

Illustration 34 g06275020

2. Before changing the “Configuration” page, you will be required to log in. Select the “Login” button and a login window will appear. The “Username” will be “admin” and the “Password” will be “password” .

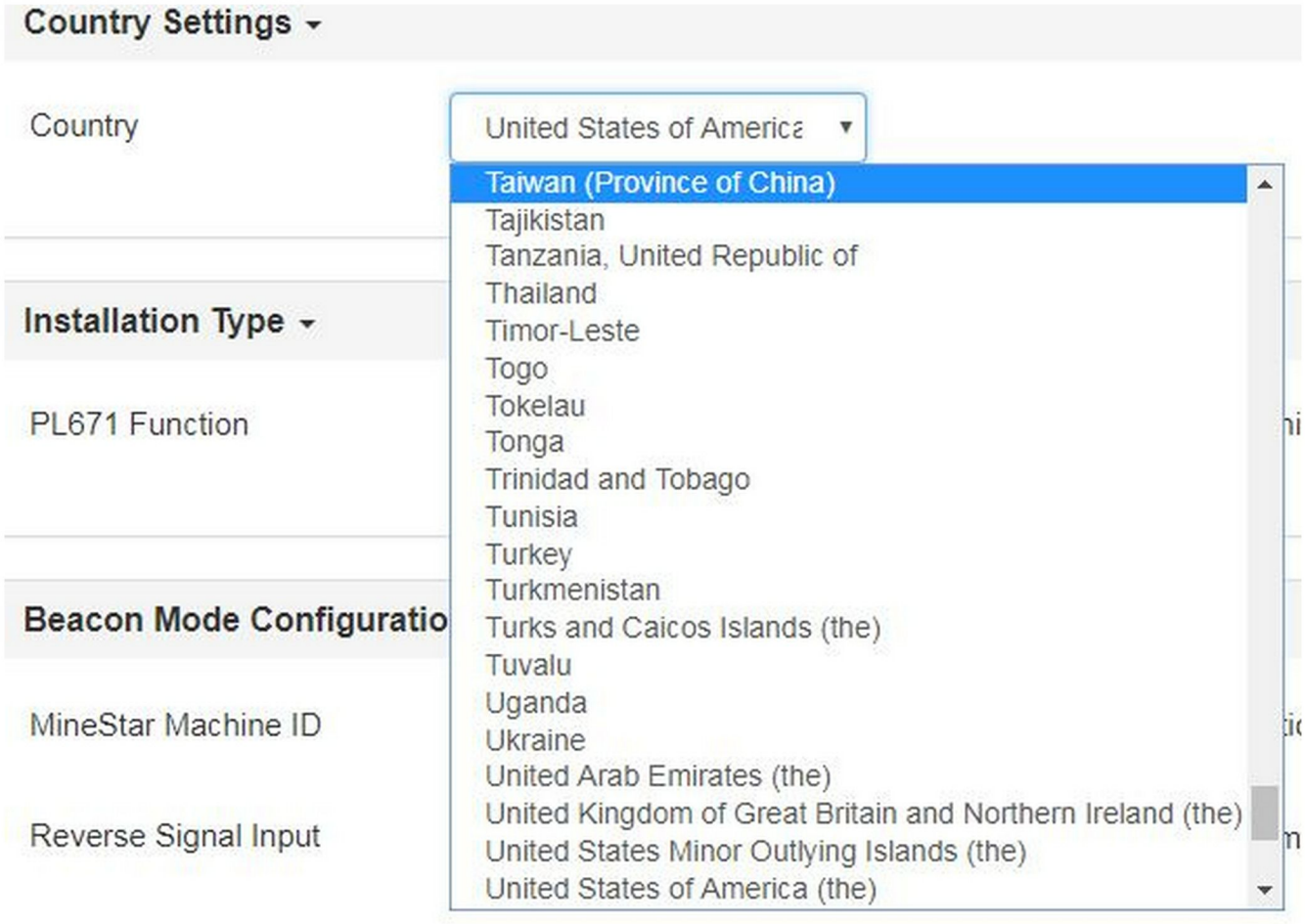

Illustration 35 g06274951

3. Configure the country settings. The country can be selected by using the country drop-down list.

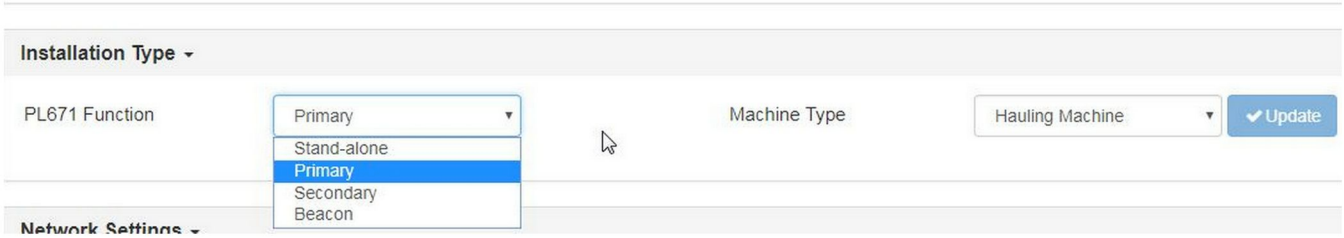

Illustration 36 g06274960

4. Configure the Installation Type. Select the PL671 Function and Machine Type, then press “Update” .

Note: When changing the PL671 function with the machine type, different sections will appear or some fields may not be edited.Specific configuration for those different PL671 functions will be explained after the general configuration section in the “Application Specific Configuration for PL671” section of this instruction.

Illustration 37 g06275015

5. Input the Machine Dimensions. The machine length is based on the direction of the x axis and the machine width is based on the y axis.

Note: Refer to Special Instruction, "Machine Dimension Measure-Up Procedure for Cat Detect Proximity Awareness" REHS9127 for more measure up information.

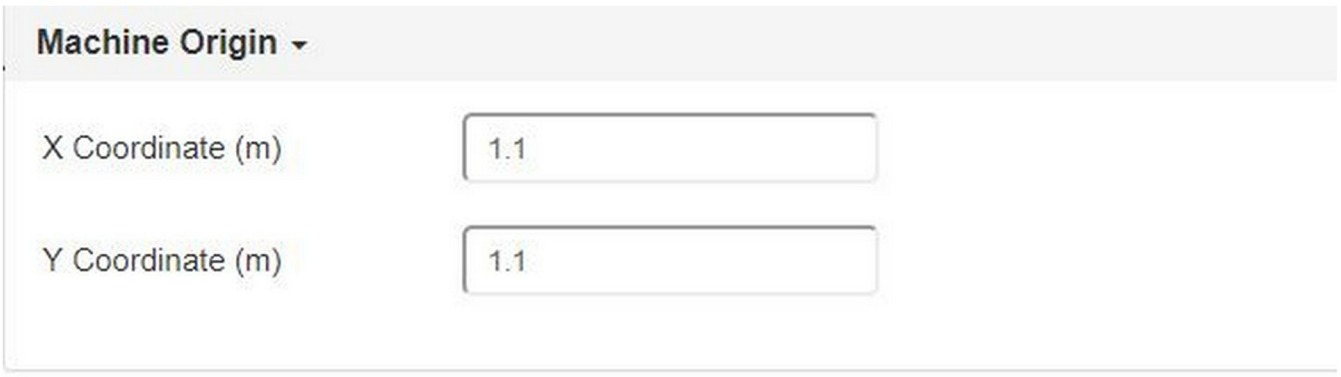

Illustration 38 g06275735

6. Input the Machine Origin. The “X Coordinate” and “Y Coordinate” for the machine origin may vary. Refer to the machine-specific manual if needed.

For example, a haul truck origin is on the machine centerline at the rear axle. The “X Coordinate” will be relative to the right rear corner of the machine and the “YCoordinate” will be relative to the right rear corner of the machine.

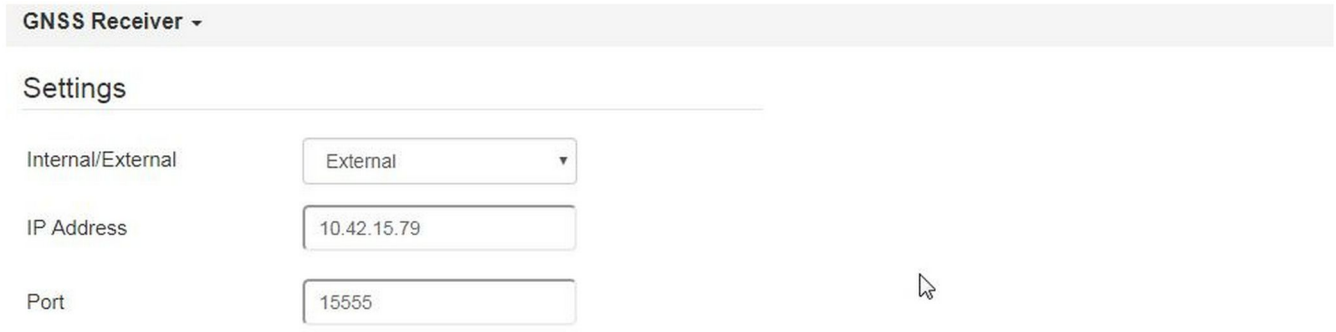

Illustration 39 g06275744

7. Populate the “GNSS Receiver Settings” .

Internal is used for machines that will be using the PL671 modules for GPS position. External is used for machines that will be using the MS352 modules for GPS positions.

Internal – If selected, the fields for “IP Address” and “Port” will be auto populated and will not be editable. The default is 127.0.0.1 for the “IP Address” and 2947 for “Port” .

External – If selected, set “IP Address” to the IP Address for the MS352 and set “Port” to 15555.

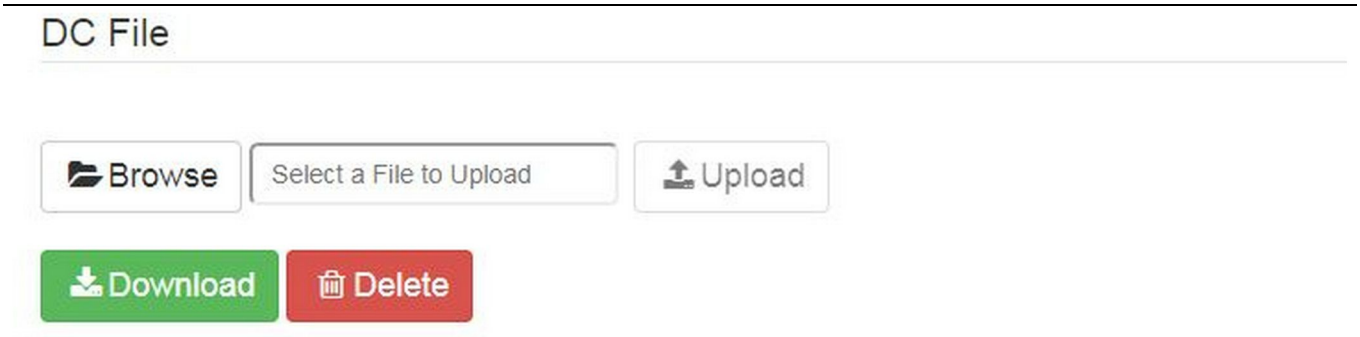

Illustration 40 g06275746

8. “DC File” :

- Upload the.dc survey file from the site.

Illustration 41 g06275748

9. “RTCM Port” (Base Station correction broadcast):

- RTCM Port number will be the standard “3784” port for connections.
- RTCM Status will be “Connected” or “Data Not Available” .

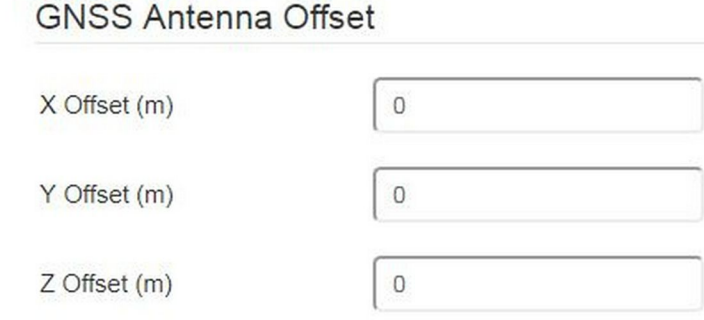

Illustration 42 g06275832

10. “GNSS Antenna Offsets” :

- “X Offset” is the distance from the origin to the antenna along the machines center line.

- “Y Offset” is the distance from the origin to the antenna along the machines width.
- “Z Offset” is the distance from the origin to the antenna in height. Enter this value as the distance from the antenna to the ground level of a machine if bench height is required.

Illustration 43 g06275836

11. MineStar FTP Configuration:

- The “FTP Username” will need to match the Office “FTP Username” .
- The “FTP Password” will need to match the Office “FTP Password” .

Illustration 44 g06275838

12. Incident Report:

- The standard default for the “Incident File Size” is “250 kb” but can be increased if a robust network is available.
- “Position Time Interval” is an output from the device.

Application Specific Configuration for PL671

PL671 Stand Alone Function Configuration

Note: Secondary PL671 is only needed in selected applications. Refer to “Secondary Function” on configuration details.

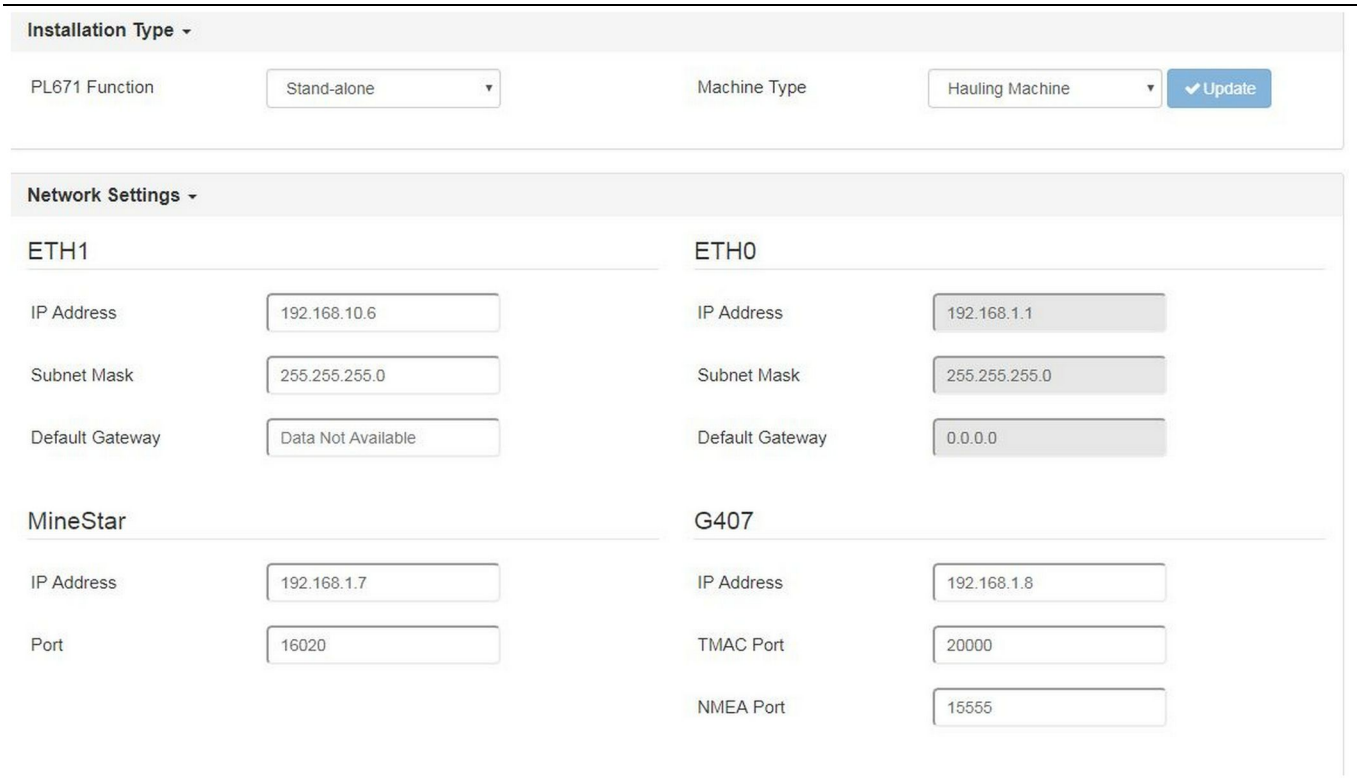

Illustration 45 g06276181

1. Configure the stand-alone PL671.

a. Select “Stand-alone” from the “PL671 Function” drop-down list.

b. Select the machine type from the “Machine Type” drop-down list and click “Update” .

c. Populate the site-specific “IP Address” , “Subnet Mask” , and “Default Gateway” of the “ETH1” section.

d. Populate the site office “IP Address” and “Port” of the “MineStar” section.

e. In the “G407” section, populate the “IP Address” of the Display. Set the “TMAC Port” to “20000” . Set the “NMEA Port” to “15555”

Note: The “ETH0” section is grayed out as there is no need for communication to a secondary PL671.

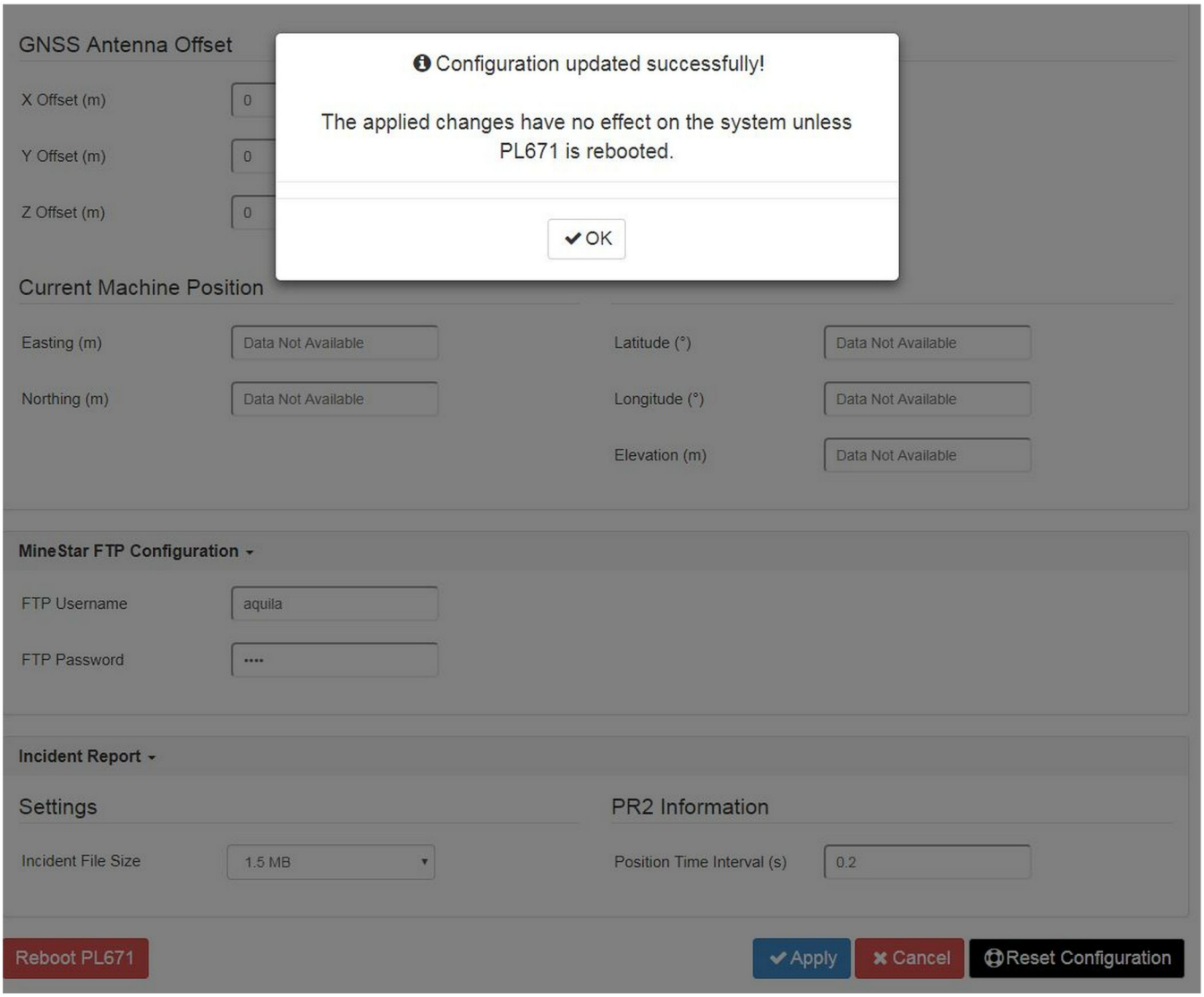

Illustration 46 g06276230

2. Proceed to the bottom of the “Configuration” page and click “Apply” . Then click “OK” to acknowledge that a reboot is needed.

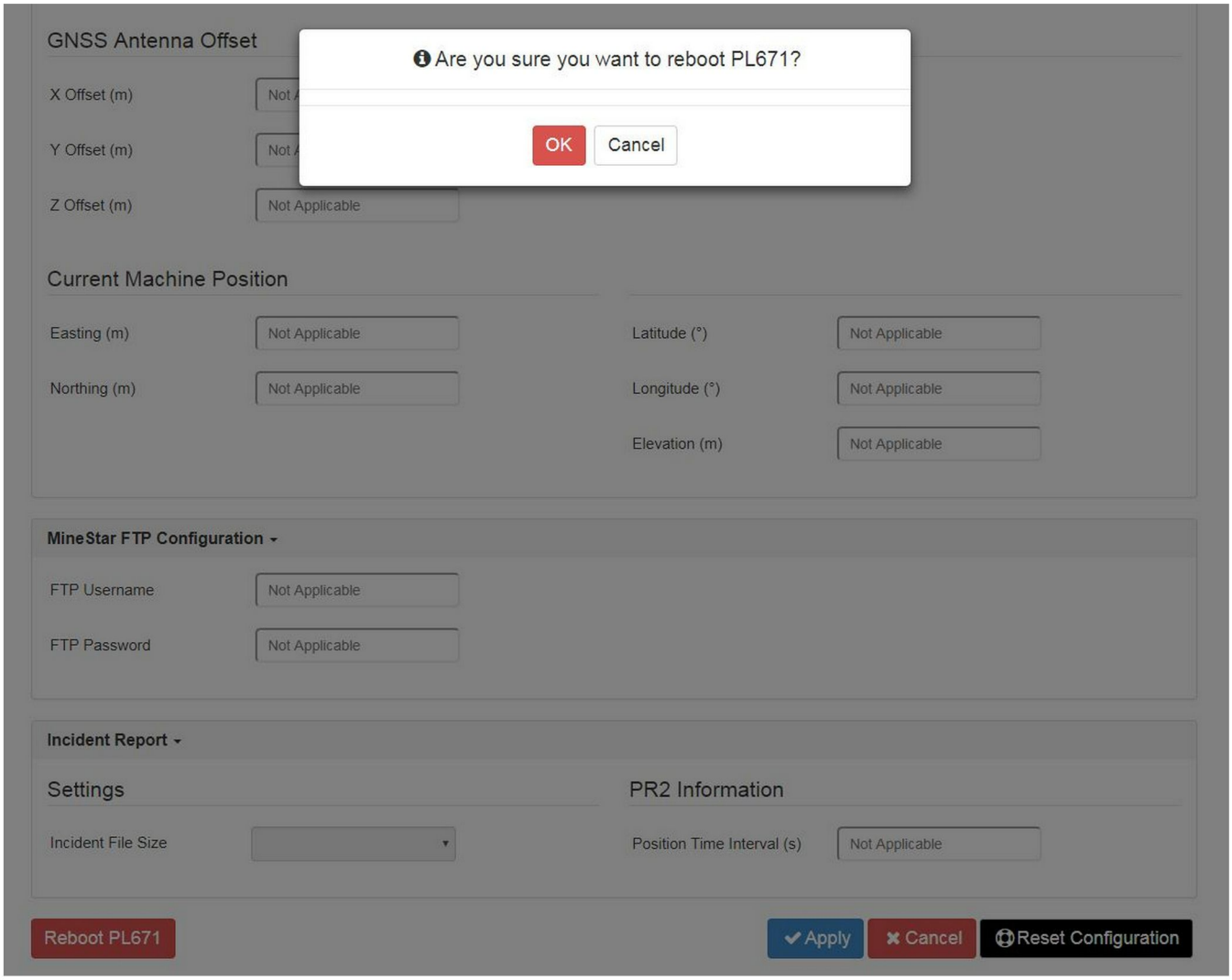

Illustration 47 g06276232

3. Click “OK” to when prompted with the “Are you sure you want to reboot PL671” dialog box.

PL671 Primary and or Secondary Function Configuration

Primary Function

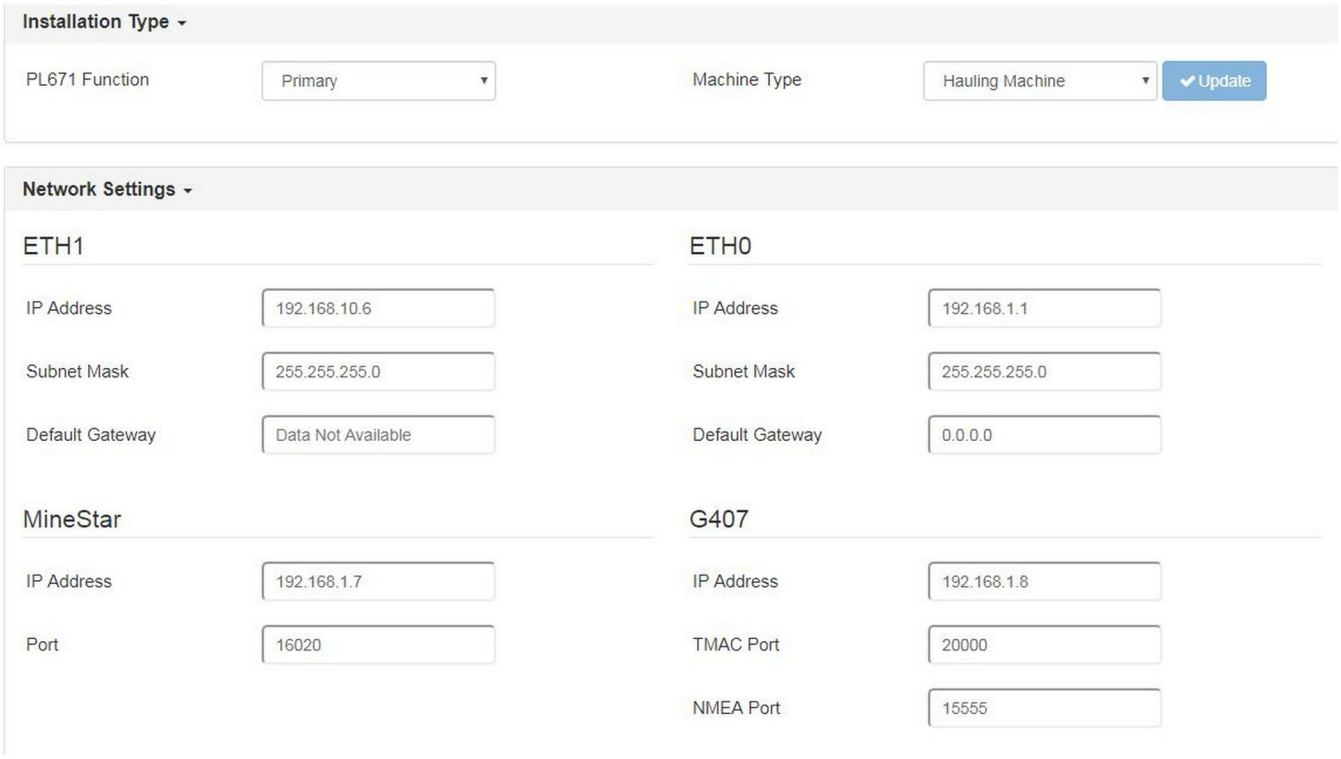

Illustration 48 g06277119

1. Configure the primary PL671.

a. Select “Primary” from the “PL671 Function” drop-down list.

b. Select the machine type from the “Machine Type” drop-down list and click “Update” .

c. Populate the site-specific “IP Address” , “Subnet Mask” , and “Default Gateway” of the “ETH1” section.

d. Populate the site office “IP Address” and “Port” of the “MineStar” section.

e. Set the “IP Address” to “192.168.1.1” . Set the “Subnet Mask” to “255.255.255.0” . Set the “Default” to “0.0.0.0” in the “ETH0” section.

f. In the “G407” section, populate the “IP Address” of the Display. Set the “TMAC Port” to “20000” . Set the “NMEA Port” to “15555”

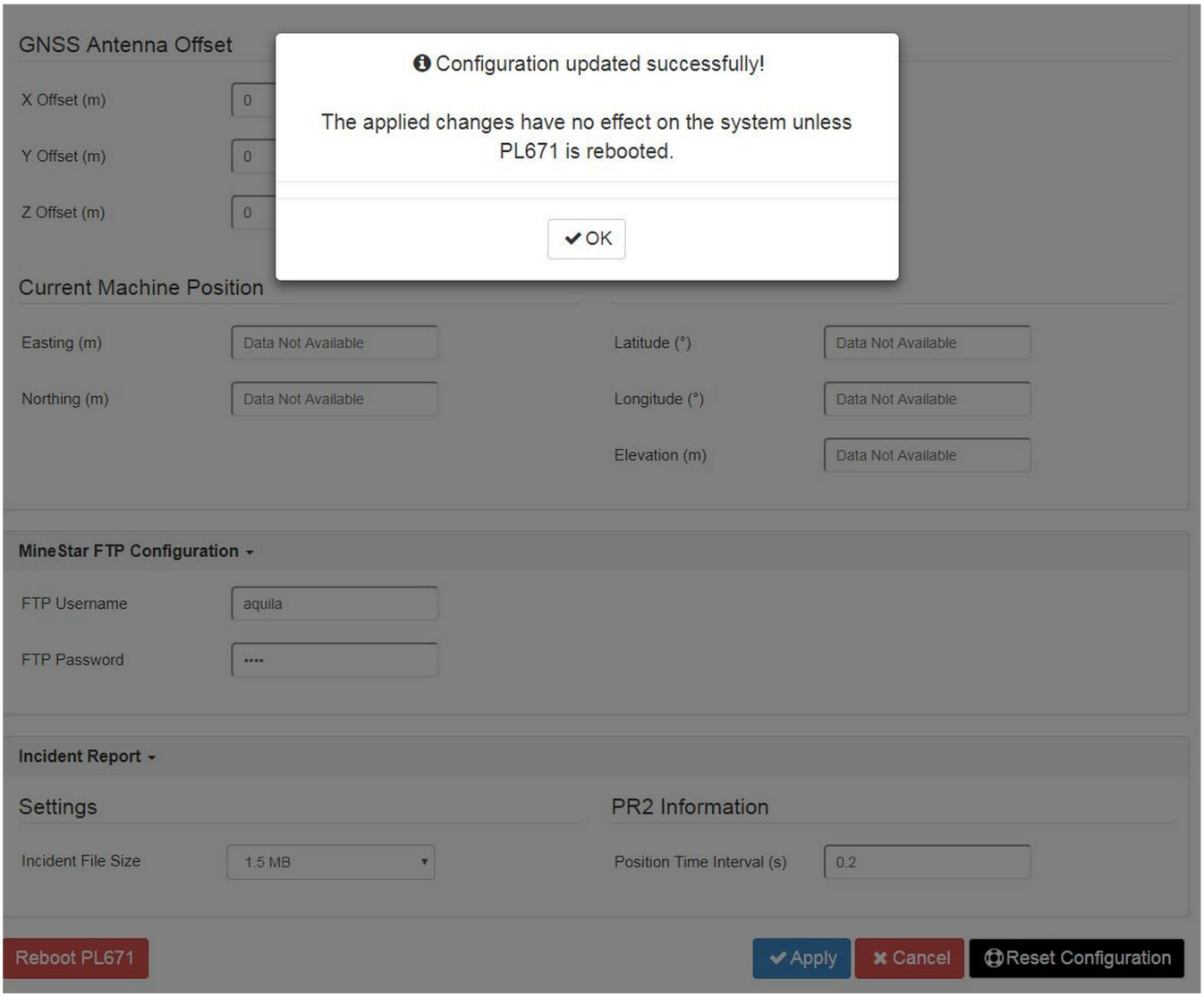

Illustration 49 g06276230

2. Proceed to the bottom of the “Configuration” page and click “Apply” . Then click “OK” to acknowledge that a reboot is needed.

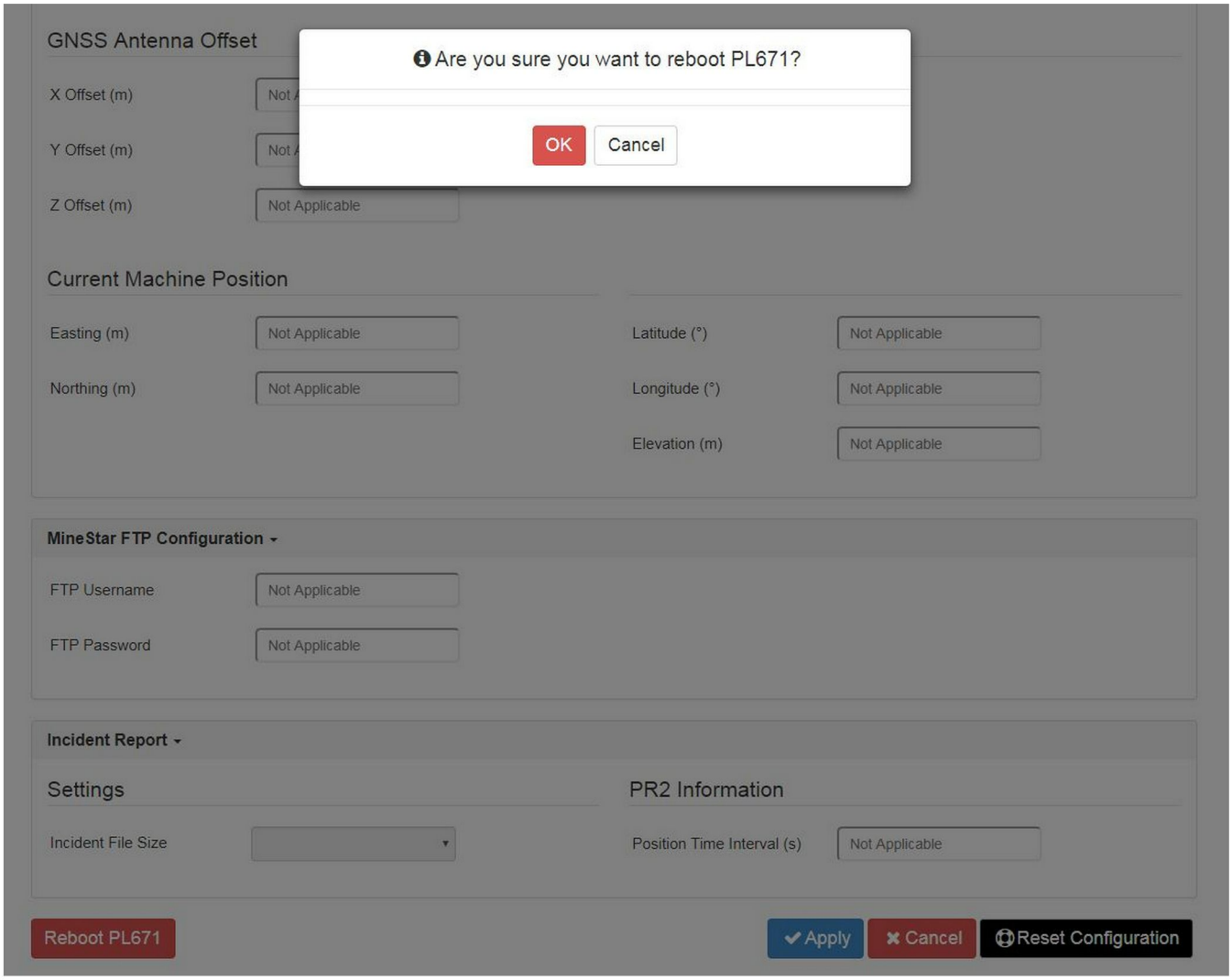

Illustration 50 g06276232

3. Click “OK” to when prompted with the “Are you sure you want to reboot PL671” dialog box.

Secondary Function

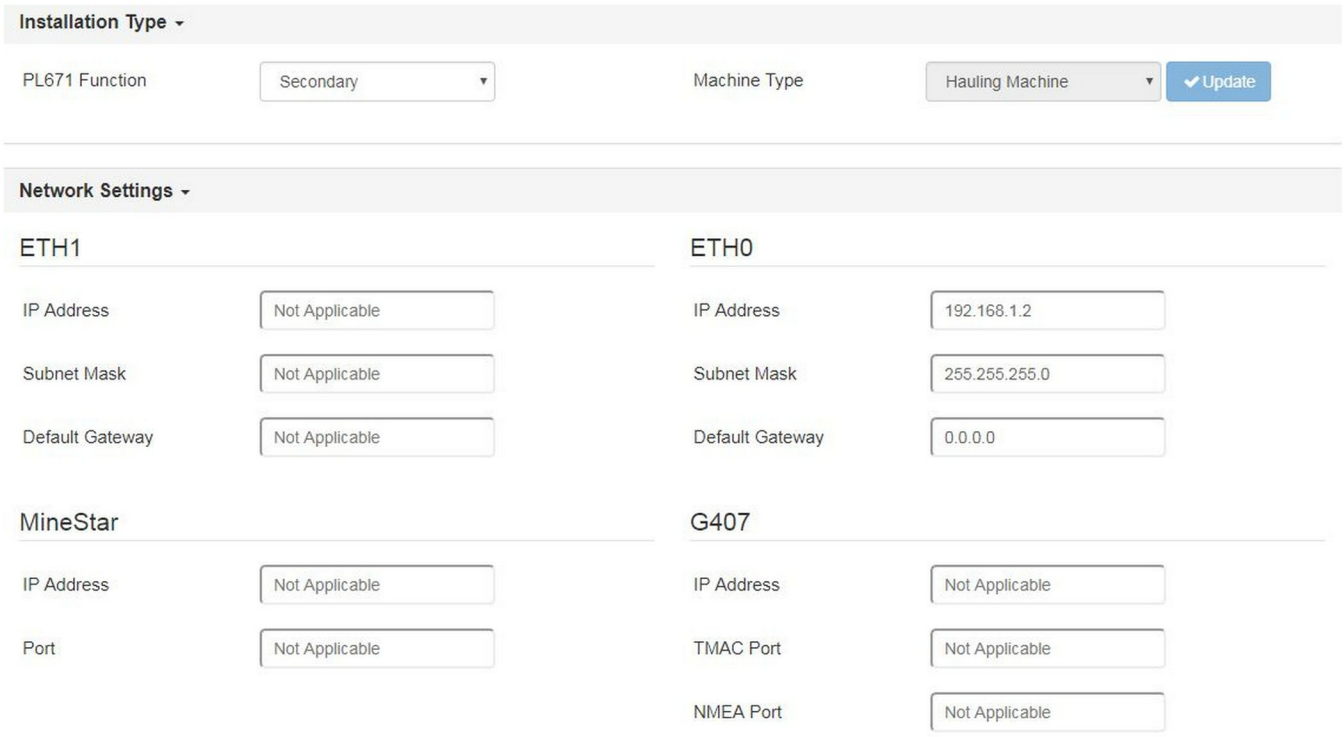

Illustration 51 g06277123

1. Configure the secondary PL671.

Note: The “Machine Type” will be grayed out as it is not required for a secondary PL671.

2. Configure the “Network Settings” .

a. The “ETH0” section auto populates. Verify that the “IP Address” is set to “192.168.1.2” , the “Subnet Mask” is set to “255.255.255.0” , and the “Default” is set to “0.0.0.0” .

Note: No other Network Settings are applicable when the PL671 is used as a secondary function.

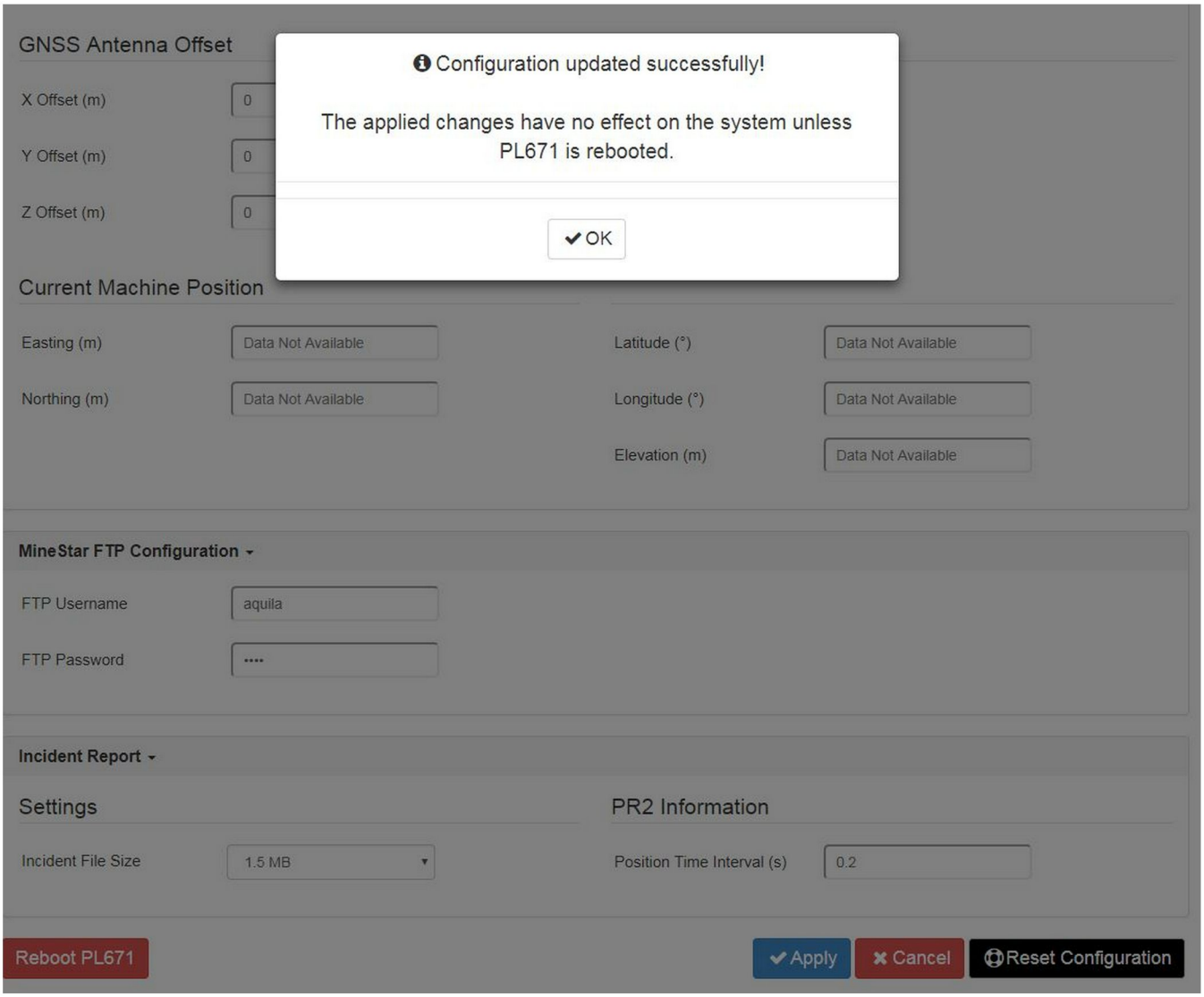

Illustration 52 g06276230

3. Proceed to the bottom of the “Configuration” page and click “Apply” . Then click “OK” to acknowledge that a reboot is needed.

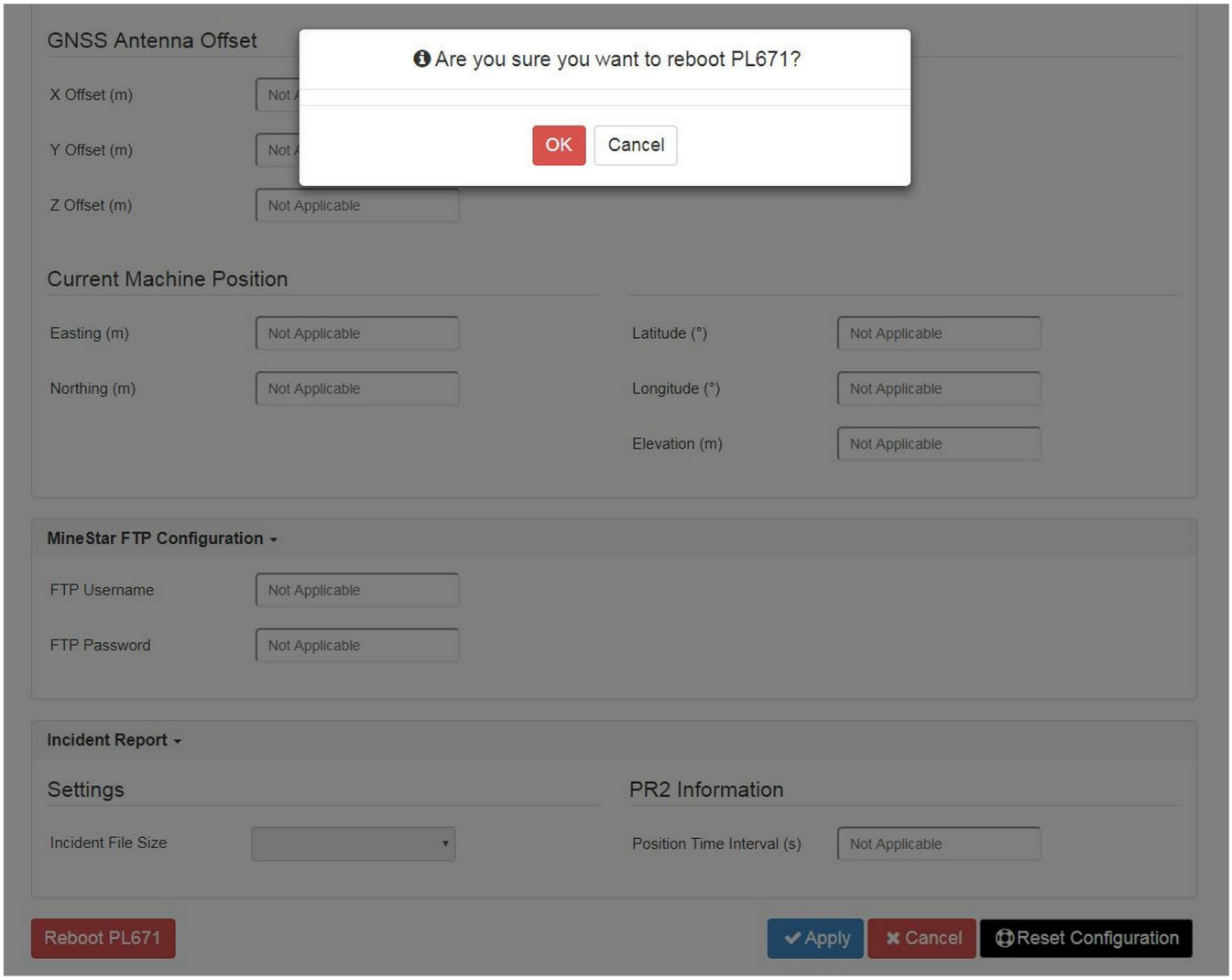

Illustration 53 g06276232

4. Click “OK” to when prompted with the “Are you sure you want to reboot PL671” dialog box.

Configuration Procedure for Rotational Option One with Two PL671 Modules

Configuring the Primary PL671

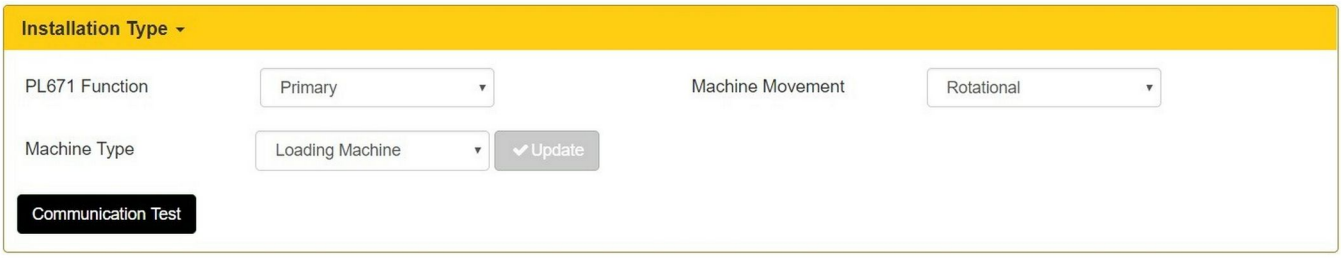

Illustration 54 g06372699

1. Configure the “Installation Type” setting.

a. Select “Loading Machine” in the drop-down box for “Machine Type” . Press the “Update” button to update your selection. Refer to Illustration 54.

Note: Updating the “Machine Type” must be the first step done to edit the other options under “Installation Type” .

b. Select “Primary” in the drop-down box for the “PL671 Function” . Refer to Illustration 54.

c. Select “Rotational” in the drop-down box for “Machine Movement” . Refer to Illustration 54.

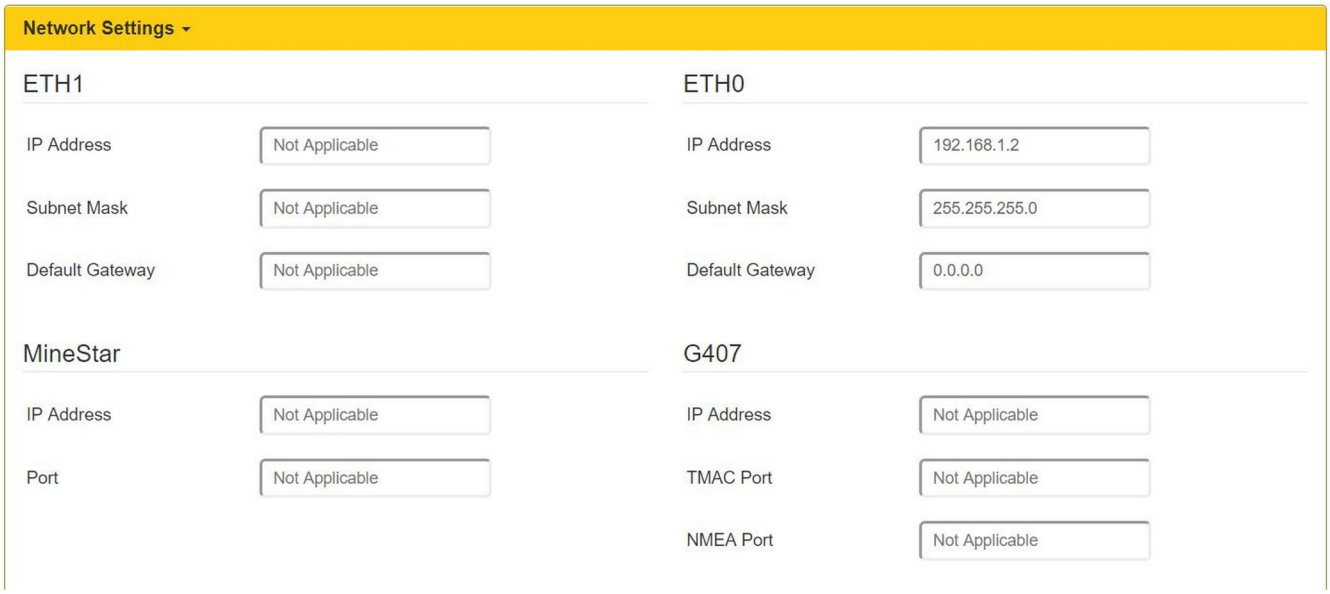

Illustration 55 g06372704

2. Configure the network settings.

a. Under the “Network Settings” tab in the “ETH1” section, populate the site-specific “IP Address” , “Subnet Mask” , and the “Default Gateway” that will be used for the primary PL671. Refer to Illustration 55.

b. Under the “Network Settings” tab in the “MineStar” section, populate the site office “IP Address” and “Port” . Refer to Illustration 55.

c. Under the “Network Settings” tab in the “G407” section, populate the “IP Address” of the display. Set the “TMAC Port” and the “NMEA Port” of the display. Refer to Illustration 55.

Note: The “ETH0” section will automatically generate.

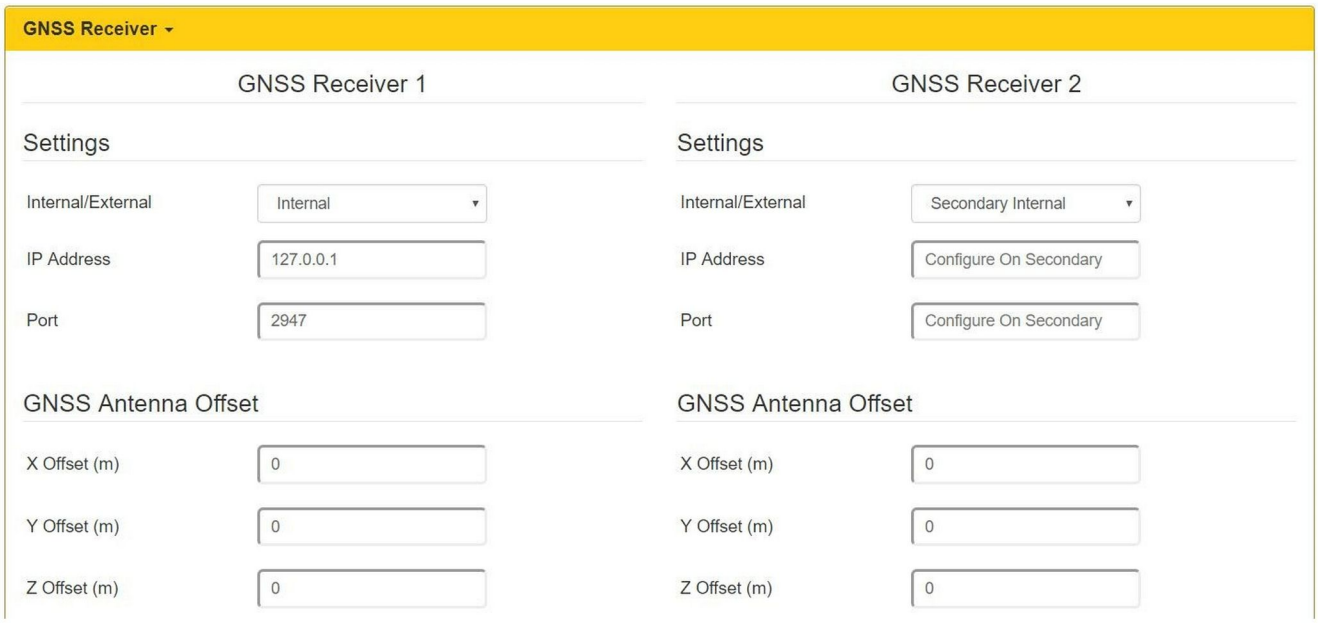

Illustration 56 g06372707

3. Configure the GNSS Receiver Settings.

a. Under “GNSS Receiver 1” , “Settings” , “Internal/External” select “Internal” from the drop-down box.

b. Under “GNSS Receiver 1” “Settings” populate the site-specific “IP Address” and “Port” numbers.

c. Under “GNSS Receiver 1” “GNSS Antenna Offset” populate “X Offset” , “Y Offset” , and “Z Offset” attached to the primary PL671.

d. Under “GNSS Receiver 2” , “Settings” , “Internal/External” select “Secondary Internal” from the drop-down box.

e. Under “GNSS Receiver 2” “GNSS Antenna Offset” populate “X Offset” , “Y Offset” , and “Z Offset” attached to the secondary PL671

Note: The “IP Address” and “Port” for the secondary PL671 will automatically generate after the secondary PL671 is configured.

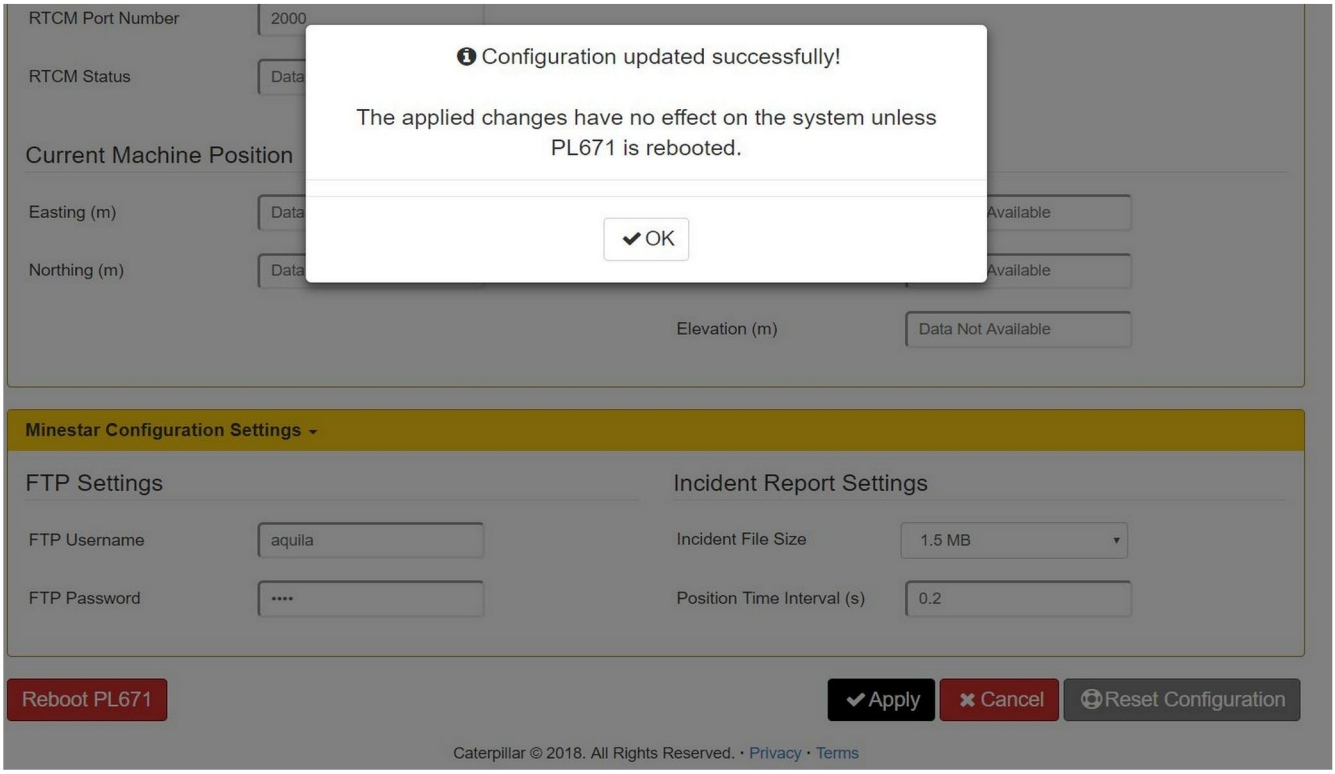

Illustration 57 g06372691

4. Proceed to the bottom of the “Configuration” page and click “Apply” . Click “OK” to acknowledge that a reboot is needed. Then click “Reboot PL671” for the configuration to install on the device.

Configuring the Secondary PL671

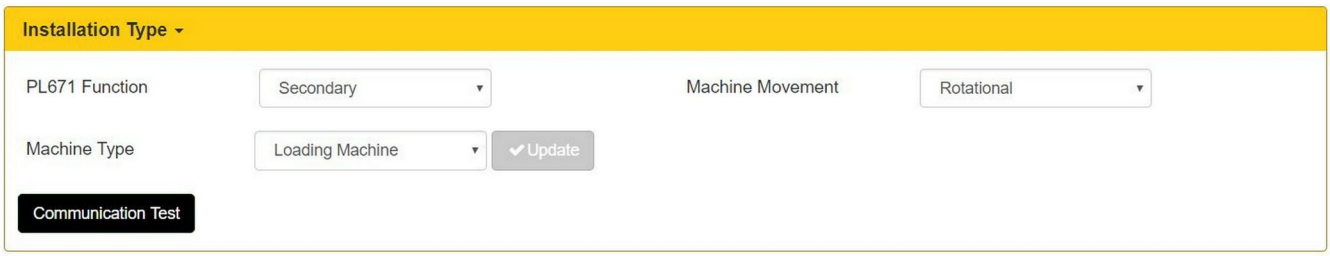

Illustration 58 g06372947

1. Configure the “Installation Type” setting.

a. Select “Loading Machine” in the drop-down box for “Machine Type” . Press the “Update” button to update your selection. Refer to Illustration 58.

Note: Updating the “Machine Type” must be the first step done to edit the other options under “Installation Type” .

b. Select “Secondary” in the drop-down box for the “PL671 Function” . Refer to Illustration 58.

c. Select “Rotational” in the drop-down box for “Machine Movement” . Refer to Illustration 58.

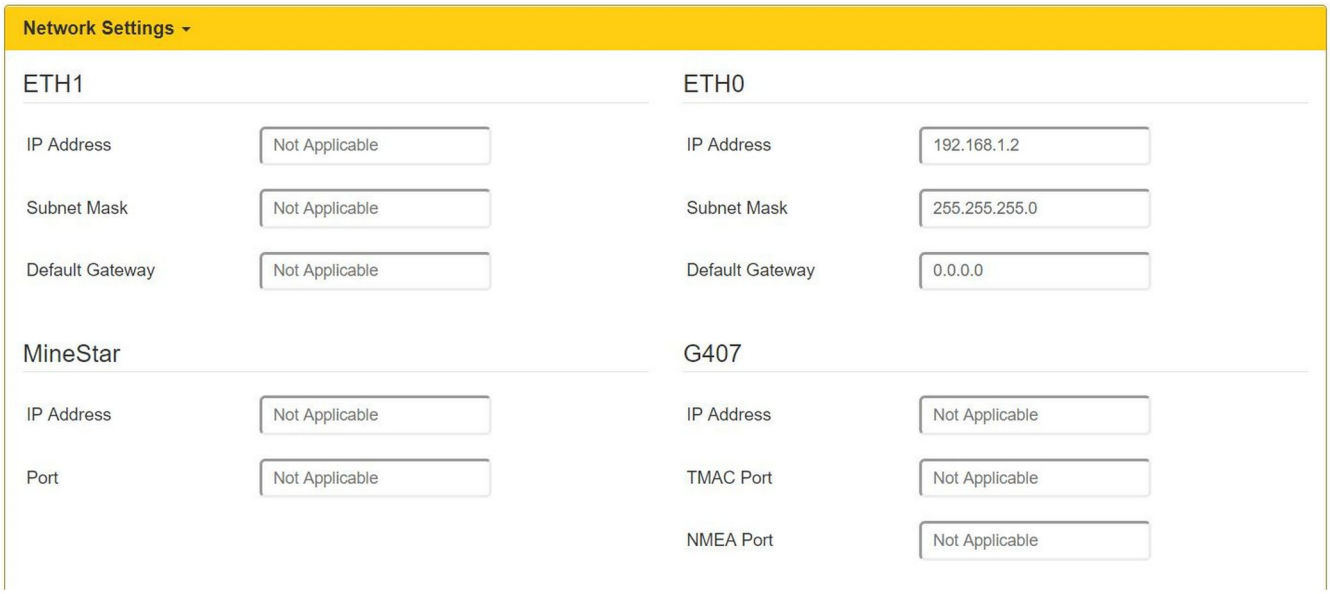

Illustration 59 g06372704

2. Under “ETH0” the “IP Address” for communicating to the primary PL671 will automatically populate.

Note: You will not be able to edit any of the boxes in “Network Settings” .

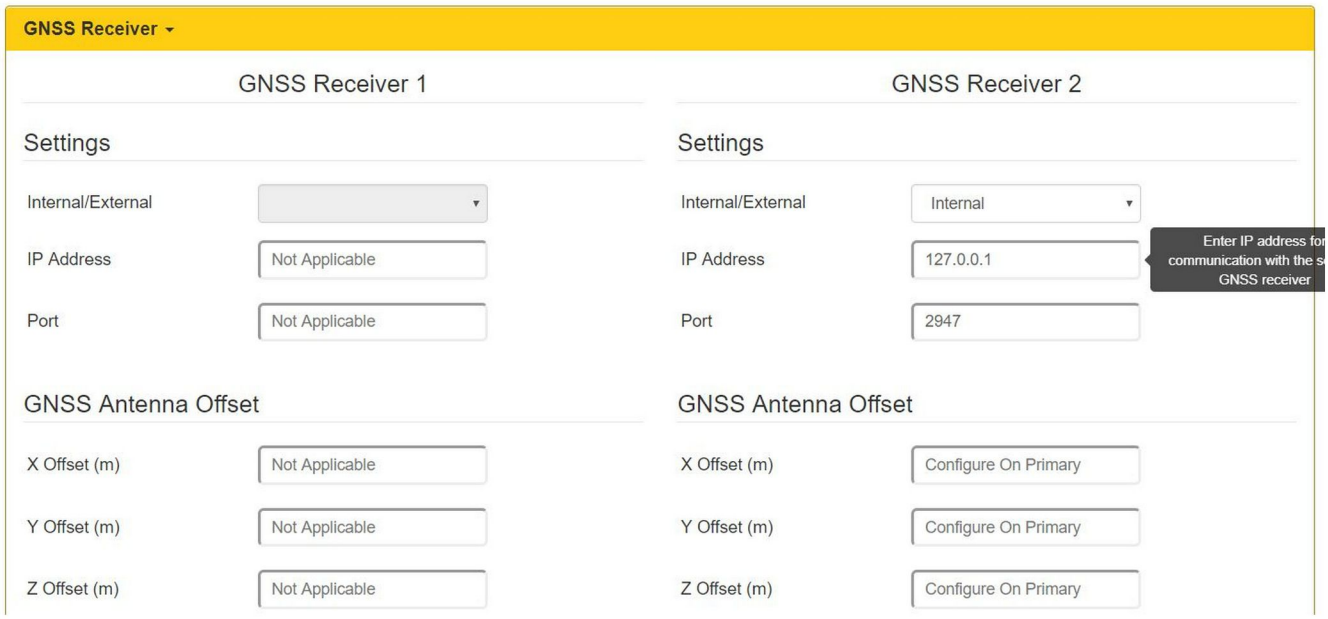

Illustration 60 g06372976

3. Select “Internal” from the drop-down box under “GNSS Receiver” in the “Internal/External” setting.

Note: All other settings will be “Not Applicable” , as they were configured on the primary PL671.

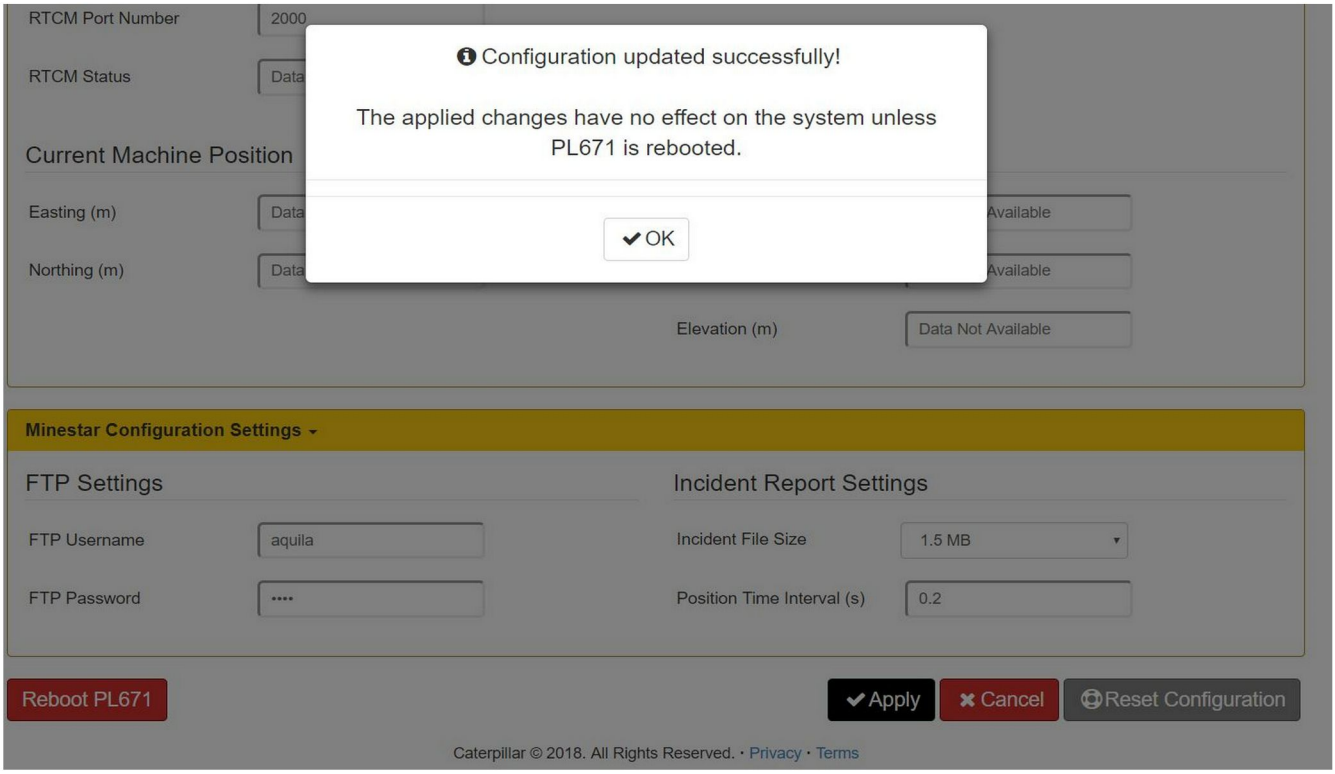

Illustration 61 g06372691

4. Proceed to the bottom of the “Configuration” page and click “Apply” . Click “OK” to acknowledge that a reboot is needed. Then click “Reboot PL671” for the configuration to install on the device.

Configuration Procedure for Rotational Option Two with One PL671 and One MS352

1. Configure one PL671 with one MS352

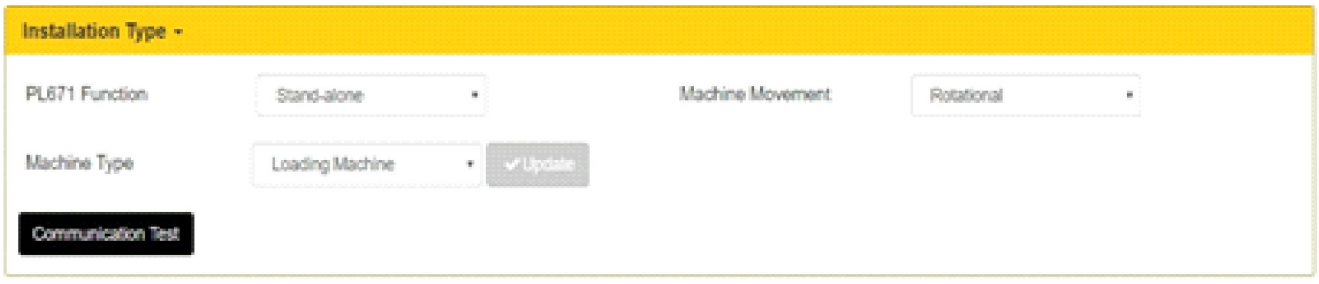

Illustration 62 g06372628

a. Under “Installation Type” tab, select “Stand Alone” from the “PL671 Function” drop-down list. Refer to Illustration 62.

b. Under “Installation Type” tab, select “Rotational” from the “Machine Movement” drop-down list. Refer to Illustration 62.

c. Under “Installation Type” tab, select “Loading Machine” from the “Machine Type” drop-down list. Refer to Illustration 62.

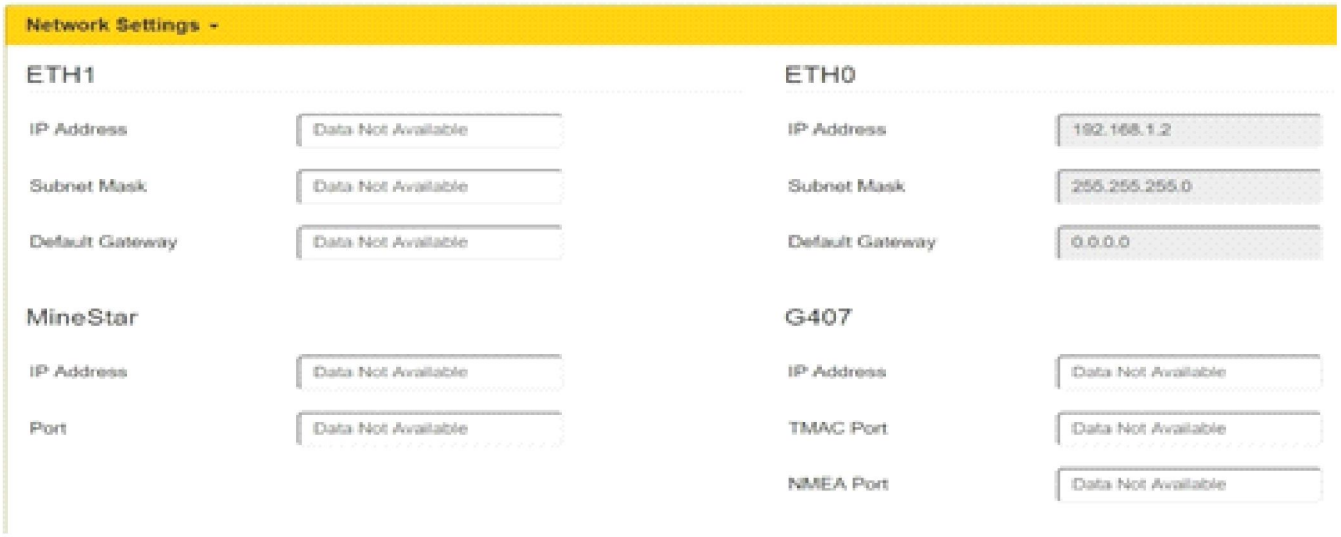

Illustration 63 g06372631

d. Under the “Network Settings” tab in the “ETH1” section, populate the site-specific “IP Address” , “Subnet Mask” , and the “Default Gateway” . Refer to Illustration 63.

e. Under the “Network Settings” tab in the “MineStar” section, populate the site office “IP Address” and “Port” . Refer to Illustration 63.

f. Under the “Network Settings” tab in the “G407” section, populate the “IP Address” of the display. Set the “TMAC Port” to “2000” and the “NMEA Port” to “15555” . Refer to Illustration 63.

Note: The “ETH0” section will be grayed out.

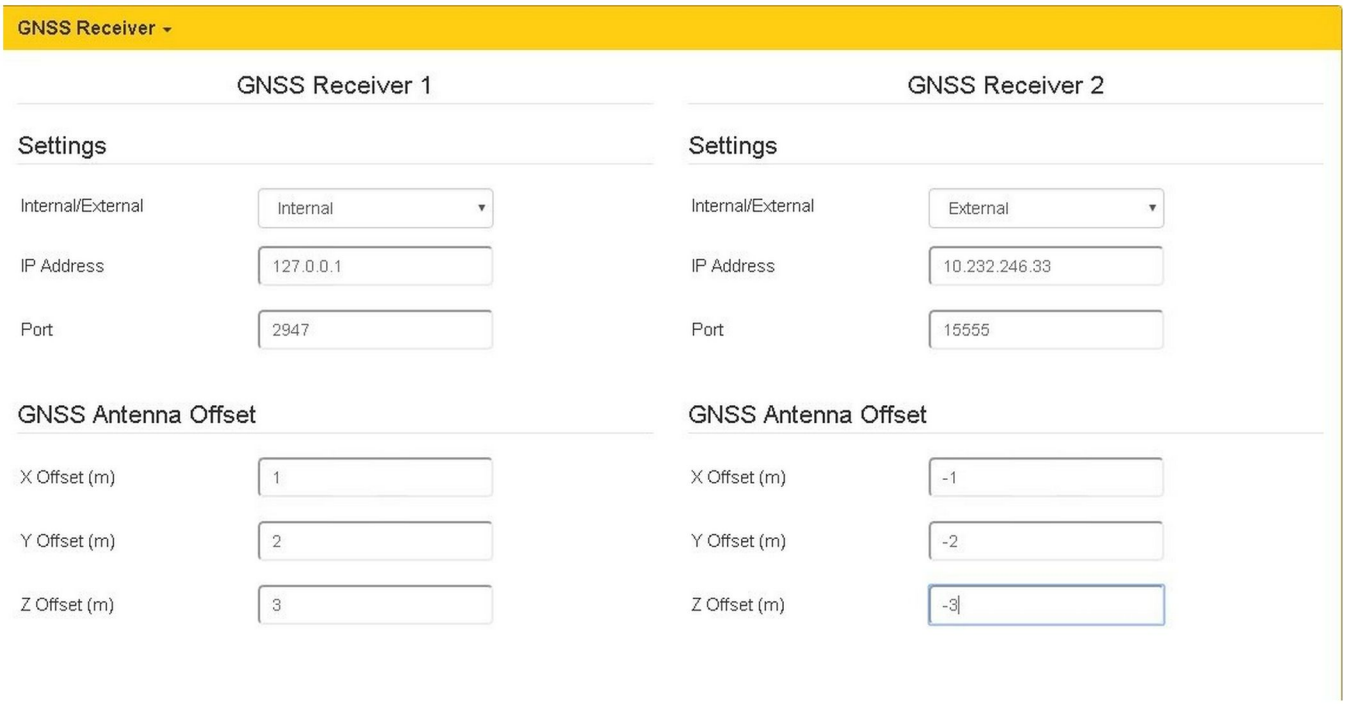

Illustration 64 g06372685

2. Configure the GNSS Receiver Settings for Rotational with One PL671 and One MS352.

a. Under “GNSS Receiver 1” , “Settings” , “Internal/External” select “Internal” from the drop-down box.

b. Under “GNSS Receiver 1” “Settings” populate the site-specific “IP Address” and “Port” for the PL671.

c. Under “GNSS Receiver 1” “GNSS Antenna Offset” populate “X Offset” , “Y Offset” , and “Z Offset” .

d. Under “GNSS Receiver 2” , “Settings” , “Internal/External” select “External” from the drop-down box.

e. Under “GNSS Receiver 2” “Settings” populate the site-specific “IP Address” and “Port” for the MS352.

f. Under “GNSS Receiver 2” “GNSS Antenna Offset” populate “X Offset” , “Y Offset” , and “Z Offset” .

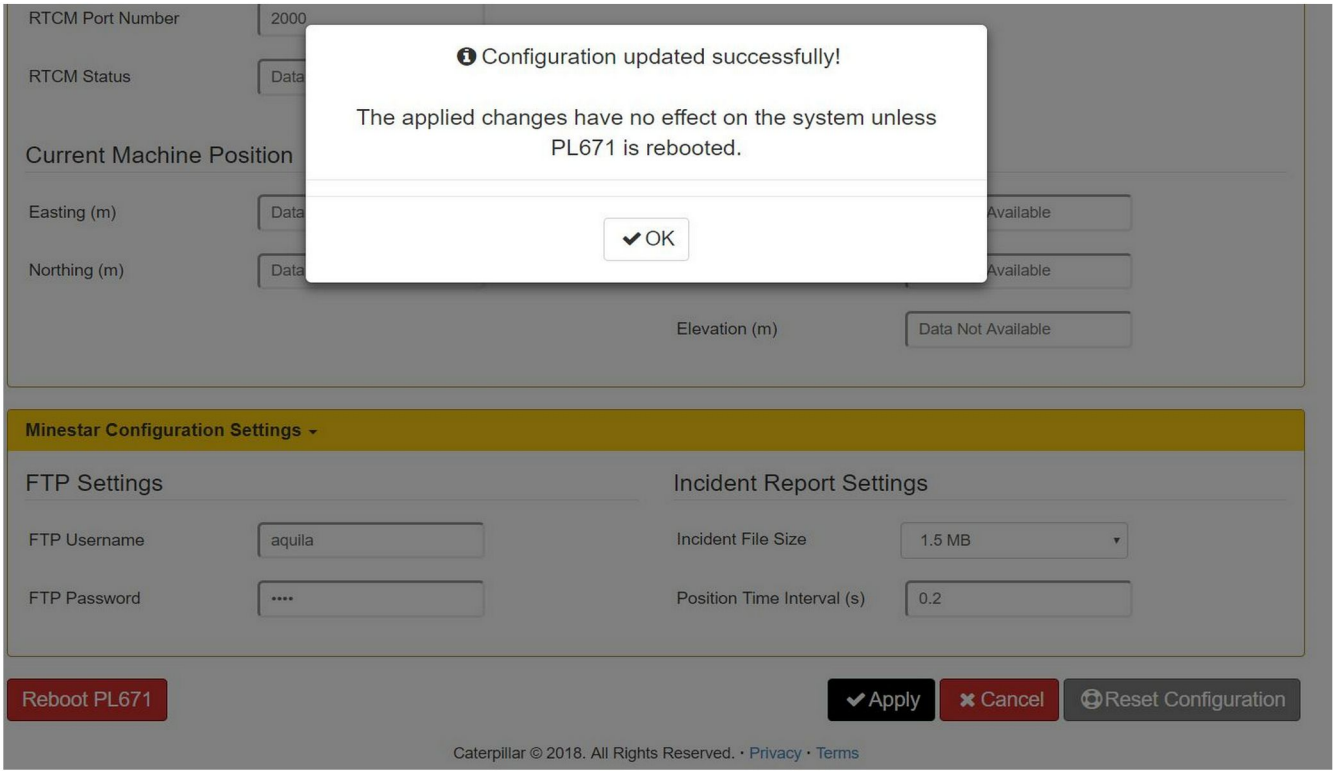

Illustration 65 g06372691

3. Proceed to the bottom of the “Configuration” page and click “Apply” . Then click “OK” to acknowledge that a reboot is needed.

PL671 Beacon Function Configuration

There are two ways to configure the Beacon function. Beacon function with the WIFI Client option enabled allows the PL671 to connect to the sites wireless infrastructure without the requirement of a site radio by using its internal Wi-Fi card. Beacon function with WIFI Client disabled will allow for the use of the “ETH1” port to configure Beacon with a site radio.

Use the following Steps to configure the Beacon function.

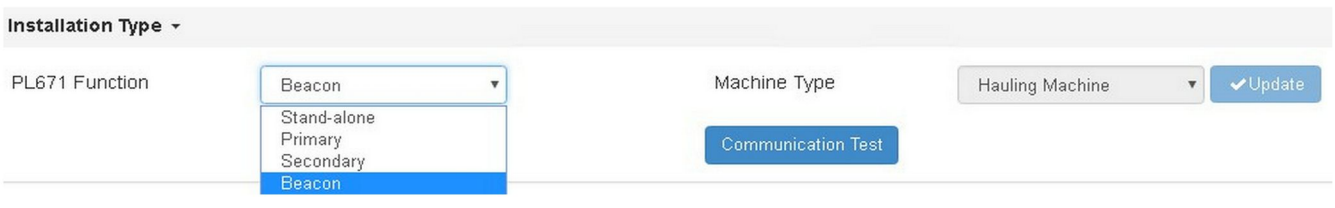

Illustration 66 g06307393

1. Select “Beacon” from the PL671 function drop-down list.

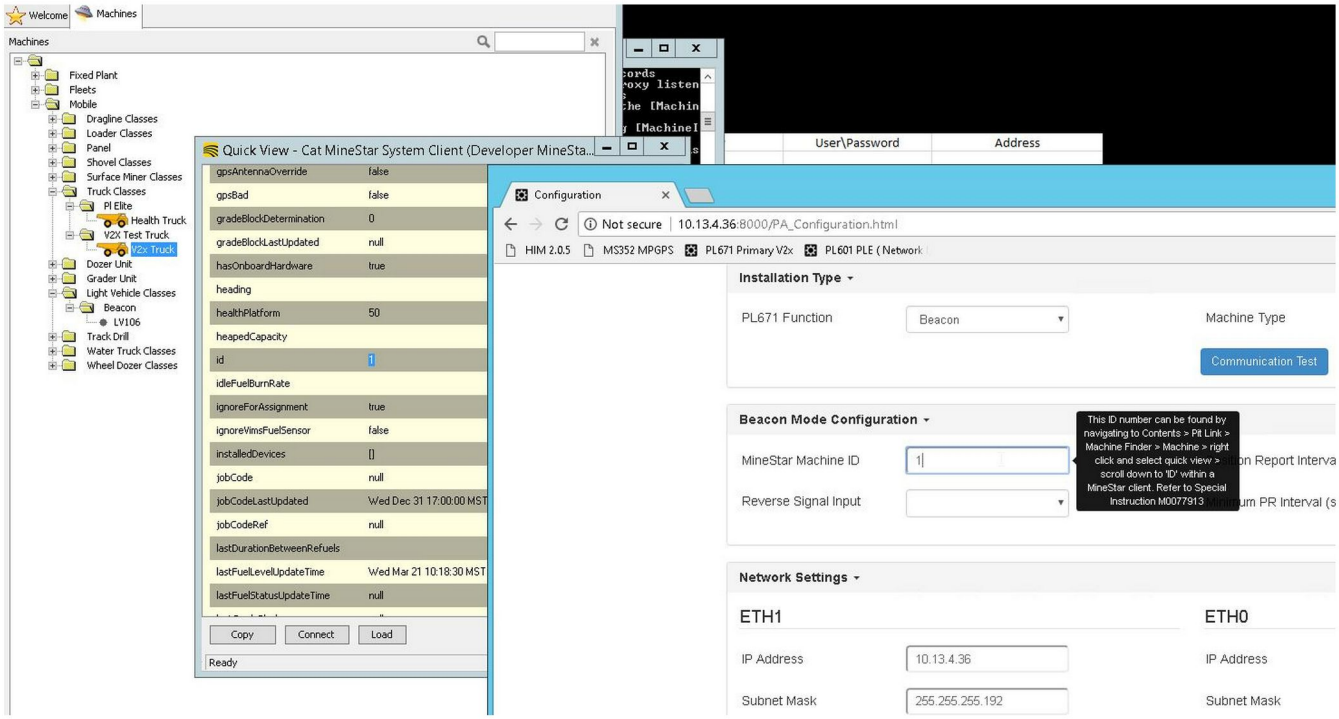

Illustration 67 g06308186

2. Enter the MineStar Machine ID. The ID can be found by navigating to “Contents” , “Pit Link” , “Machine Finder” , “Machine” , then right-click and select “Quick View” , and scroll down to “ID” .

Illustration 68 g06308190

3. Select the “Reverse Signal Input” . This selection determines if the reverse signal is determined by power, ground, or unavailable. Determination on how to configure this option will need to be determined by site, if required.

Note: The “Position Report Interval” is how often a position report comes from the device and a “Minimum Position Report Interval” is how often a position will be created.

4. Proceed to “Beacon Configuration WIFI Client Enabled” or “Beacon Configuration WIFI Client Disabled”. The section will explain how to configure Beacon with WIFI enabled (use internal WIFI card) or disabled (use site radio). Once that configuration is completed, it is required to click the “Apply” button then click the “Reboot PL671” button at the bottom of the page to complete configuration.

Beacon Configuration WIFI Client Enabled

Beacon function with the Wi-Fi client option enabled allows the PL671 to connect to the site wireless infrastructure without the requirement of a site radio by using an internal Wi-Fi card.

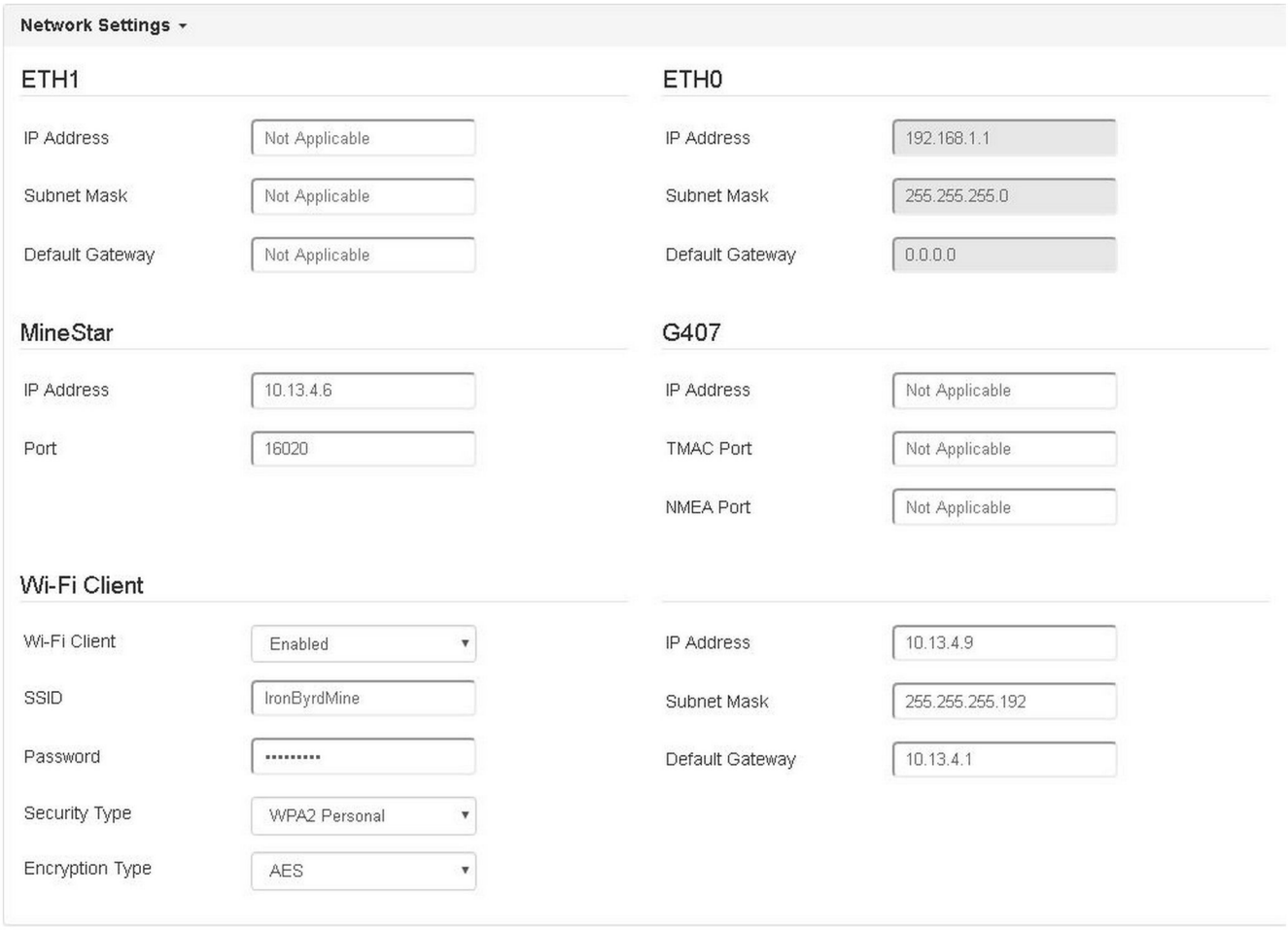

Illustration 69 g06308201

ETH1 Section:

- Non-editable

ETH0 Section:

- Non-editable

MineStar Section:

- IP Address: Set to Site MineStar Office IP Address
- Port: Set to MineStar Office Port

G407 Section

- Non-editable

WIFI Client Section:

- Set SSID: Name used to connect WIFI access point
- Set Password: Password to connect to the WIFI network entered in the SSID Field.
- Security Type: WPA2 is the only supported security type.
- Encryption Type: AES is the only supported encryption type
- Set the IP Address: Static Address for the WIFI adapter
- Set the Subnet Mask: Subnet mask that will be used by the WIFI adapter
- Default Gateway: Used by the WIFI adapter

Beacon Configuration WIFI Client Disabled

Beacon function with WIFI client disabled will allow for the use of the “ETH1” port to configure Beacon with a site radio.

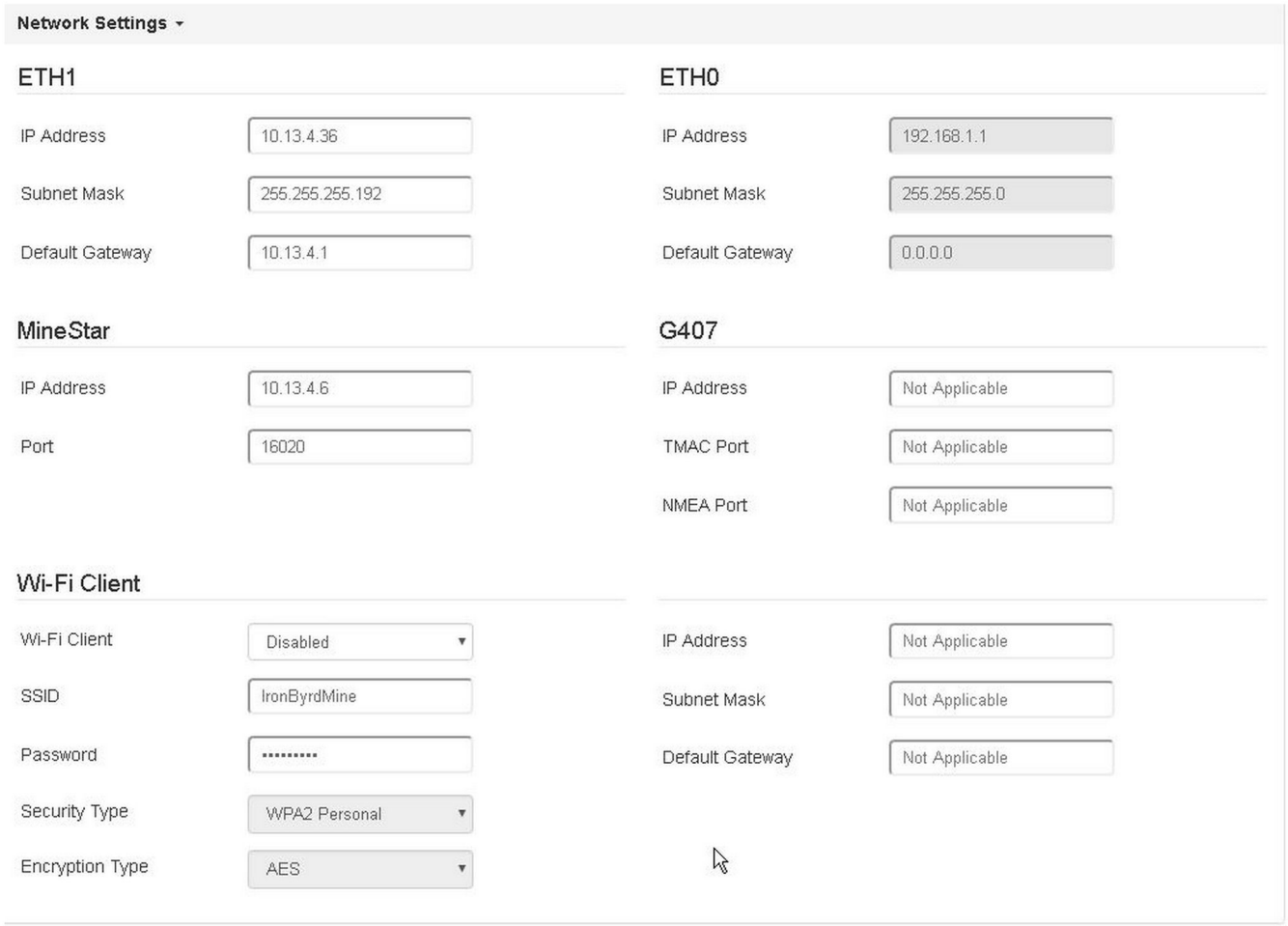

Illustration 70 g06308196

ETH1 Section:

- IP Address: Set to site radio IP address
- Set the Subnet Mask: Subnet mask that will be used by the site radio
- Default Gateway: Used by the site radio

ETH0 Section:

- Non-editable

MineStar Section:

- IP Address: Set to Site MineStar Office IP Address
- Port: Set to MineStar Office Port

G407 Section

- Non-editable

WIFI Client Section:

- SSID: Non-editable
- Password: Non-editable
- Security Type: Non-editable.
- Encryption Type: Non-editable
- IP Address: Non-editable
- Subnet Mask: Non-editable
- Default Gateway: Non-editable

Accessing the Web Configuration After Initial Setup with the Laptop

1. Change the LAN adapter setting to be within the same configuration range as the “IP Address” , “Subnet Mask” , and the “Default” of the PL671.

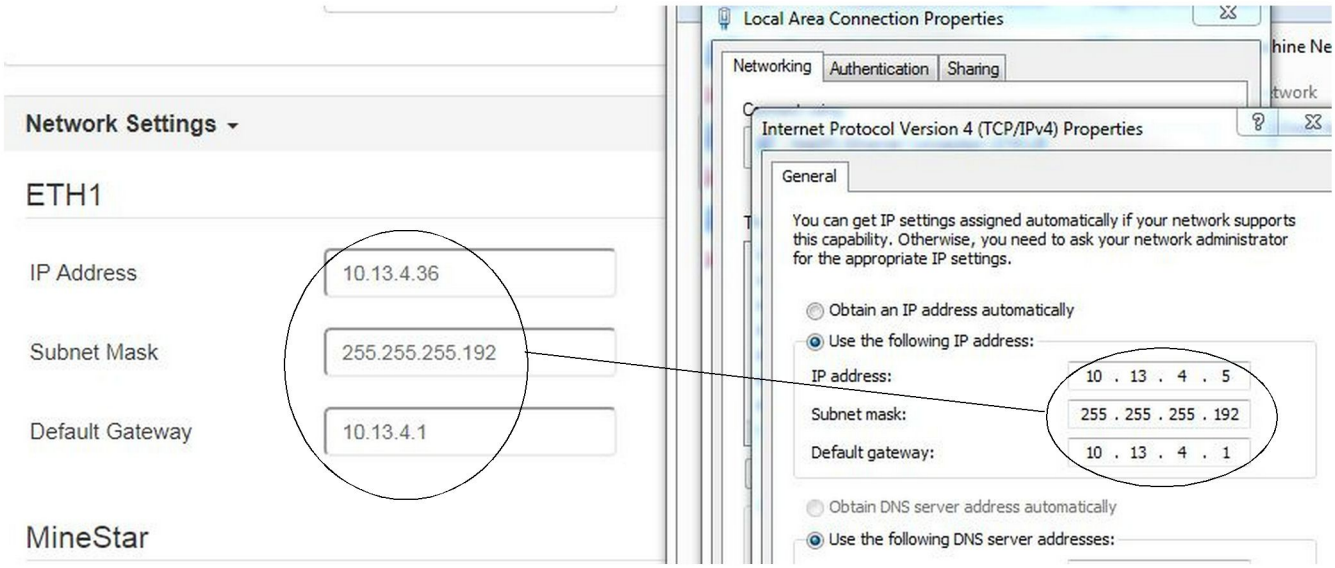

Illustration 71 g06277139

a. Inside the “Network and Sharing Center” select, “Network Connections” , then “Local Area Connection” , followed by “Properties” , “Networking” , and “Internet Protocol” .

2. Using a web browser, Google Chrome preferred, enter the IP address with port into the browser.

Installing the Display Software

1. Connect the pc to the display with the appropriate flashing adapter and harness.

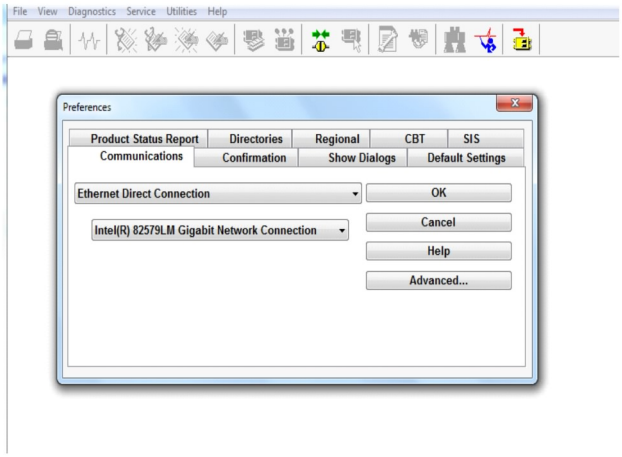

Illustration 72 g06170088

2. Using Cat ET, access the display through a direct Ethernet connection and enter WinFlash.

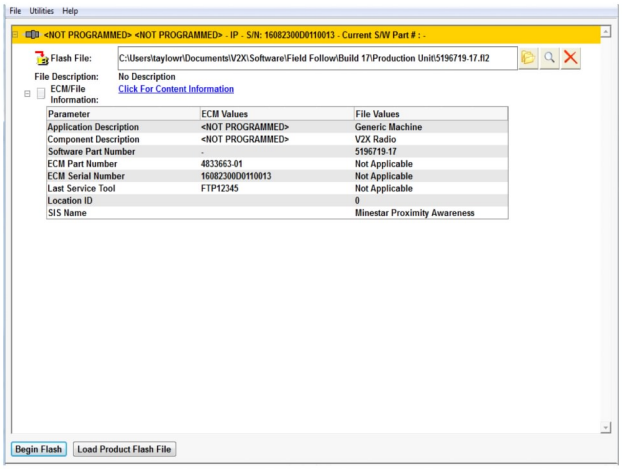

Illustration 73 g06170091

3. Select the appropriate FL2 file to be loaded onto the display and begin the flash.

Note: The flash will take up to 10 minutes and the display will reboot multiple times for operating system and application changes.

Note: Do not access the screen configuration until after Cat ET application indicated that the flash is complete.

4. After the flash has completed, Create and load the topeconfig.txt and topewincfg.txt files.

a. The topeconfig.txt will be loaded into the displays storage folder.

b. The topewincfg.txt will be loaded into the displays storage config folder.

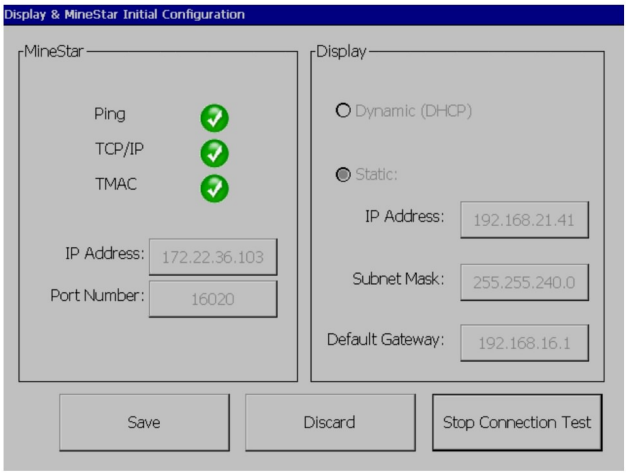

Illustration 74 g06170113

5. Perform the initial configuration by entering the MineStar (Office) and Display information.

a. Enter the MineStar “IP Address” .

b. Enter the MineStar “Port Number” .

c. Enter the “IP Address” for the display.

d. Enter the “Subnet Mask” for the display.

e. Enter the “Default Gateway” for the display.

6. After all addresses are entered, press the “Save” button. This will cause the display to reboot.

7. Once the display has rebooted press “Start Connection Test” . If the test is “Successful” press the “Save” button. If the test fails, address the failure.

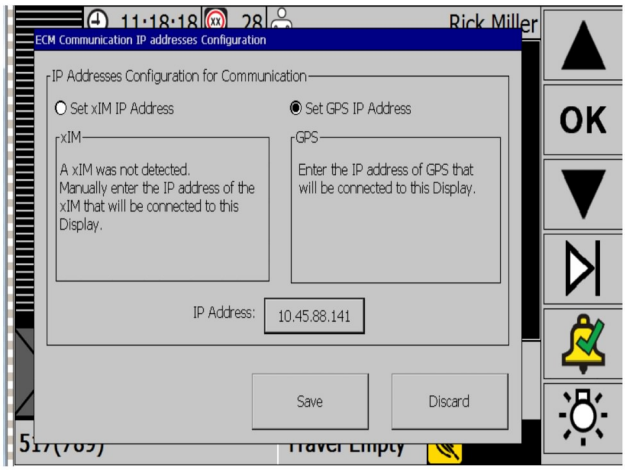

Illustration 75 g06170124

8. Set the IP Address for communication.

a. If the machine is equipped with an xIM, select the radio button for “Set xIM IP Address” and press “Save” and the display will advance to the next screen.

b. If the machine is using a GPS device, select the button for “Set GPS IP Address” and enter the IP Address of the MS352 if equipped or the PL671 providing GPS positions to the display. Press “Save” and the display will advance to the next screen.

Note: Machines with an MS352 should use the positions generated from the MS352. Machines with an MS952 should use positions generated from the PL671.

9. Complete the “Initialize PL671” page:

a. Enter the “IP Address” of the primary PL671.

b. Set the “Application Port” to “20000” for a “G407” display.

c. Set the “Server Port” to “10001” for the PL671.

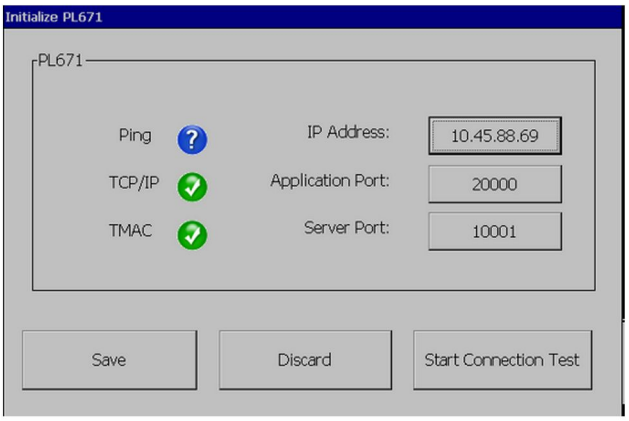

Illustration 76 g06277146

10. Press the “Save” button. The display may reboot if the file storing these values needs to be rewritten.

Proximity Awareness Tope Configuration Set Up Keys

Note: Reference System Operation, "Cat Fleet Onboard 5.3 Configuration Guide"UENR6985 for more configuration details.

Proximity Awareness General Keys

- $ Enable Machine Proximity Detection
- $ Always Show Proximity Areas
- $ Machine Avoidance Zone Default Circle Radius
- $ Machine Body Default Circle Radius

Proximity Awareness Alarms Keys

- $ Allow Proximity Awareness Alarm Acknowledge
- $ Allow Proximity Awareness Alarm Mute
- $ PA Alarm Silence In Neutral

Proximity Awareness Filter Keys

- $ Enable Assignment Proximity Detection Filter
- $ Machine Proximity Detection Filters Number
- $ Machine Proximity Detection Filter

Example:

- $ Machine Proximity Detection Filters Number =2
- $ Machine Proximity Detection Filter 0 =13 15 (Truck Class/Loader Class)
- $ Machine Proximity Detection Filter 1 =13 17 (Truck Class/Shovel Class)

Note: The class IDs (13,15,17) come from the machinetype.mwf generated by the Fleet office.

Proximity Awareness Recommended Zoom Levels

- $ Minimum Zoom Level =300000
- $ No Waypoints Above Zoom =150000
- $ Maximum Zoom Level =10000
- $ Startup Zoom Level =10000

Note: Under the following conditions there is a possibility of seeing extra latency as the display renders images.

- Going over 16 km/h (10.0 mph)
- Zoom level at 150000
- Rendering of extra items such as zones, waypoints, hazards.

This does not affect alarming / warning of proximity events.

V2X Keys

- $ Use V2X Mode (key can be tabbed out if the PL671 fails to allow the system to use Proximity Awareness WiFi)
- $ V2X Position Time Interval
- $ Use External Pose (Rotational Only)
- $ Heading Report Interval (Rotational Only)

Table 46

V2X Keys				
Type	**Key**	**Syntax**	**Parameter/Description**	**Units**
Proximity Awareness General Keys				
	$ Enable Machine Proximity Detection	This key is used to activate the machine proximity detection module.	None	
	$ Always Show Proximity Area	When this key is present, the proximity zone of the truck will always be visible as a rectangular box around the truck.	None	
	$ Machine Avoidance Zone Default Circle Radius	This key is used to set the machine avoidance circle radius used by default in the proximity detection when the machine avoidance information is missing.	Integer	Centimeters
		Example - $Machine Body Default Circle Radius =200		
Proximity Awareness Alarms				
	$ Allow Proximity Awareness Alarm Acknowledge	The Proximity Awareness alarm can be acknowledged.	None	
	$ Allow Proximity Awareness Alarm Mute	The Proximity Awareness alarm will be muted if the alarms are manually muted.		
	$ Proximity Alarm Silence In Neutral	This key silences the Proximity Awareness alarm when the gear is in neutral.		
Proximity Awareness Filter				
	$ Enable Assignment Proximity Detection Filter	This key activates the filter to all the alarms occurring due to Proximity Awareness interactions between a truck and the shovel to which the truck is assigned. The body on body alarms are not suppressed.		
	$ Machine Proximity Detection Filters Number	This key is used to tell the system how many filters keys it has to look for when reading the configuration file.	Integer	Count
		Example - $ Machine Proximity Detection Filters Number =5		

(continued)

(Table 46, contd)

	$ Machine Proximity Detection Filter	This key is used to specify a machine proximity detection filter. The two parameters are the machines classes whose interactions need to be filtered by the machine proximity detection module. The filter indices must start from 0 and follow the arithmetic progression: 0, 1, 2, 3, 4 Parameter Class ID 1: Machine class ID (category ID) Parameter Class ID 2: Machine class ID (category ID)	Integer	Count
		Example - $ Machine Proximity Detection Filter 2 =16 18		
Proximity Awareness Recommended Zoom Levels				
	$ Minimum Zoom Level	See UENR6985		
	$ No Waypoints Above Zoom	See UENR6985		
	Maximum Zoom Level	See UENR6985		
	Startup Zoom Level	See UENR6985		
V2X Keys				
	$ Use V2X Mode	Enables AMP receive from V2X and configure setting for GPS and xIM This key will override the behavior of $ Use NMEA GPS Input in case of PA_ V2X Configuration 0 = xIM Setting will be enabled 1 = GPS setting will be enabled 2 = Both xlm and GPS settings will be enabled	Integer	
	$ V2X Position Time Interval	This key specifies the frequency at which Tope will send a position message to the V2X box	Integer	Seconds
		Example - $ V2X Position Time Interval =60 Every 60 seconds, Tope will send a message to V2X box indicating the position of the machine.		

(continued)

(Table 46, contd)

	$ Use External Pose	Use this key to use pre-calculated heading, speed, position (based on machine origin, GPS off-set applied), supplied by an external source.		
	$ Heading Report Interval	Use this key to indicate the minimum heading change of a dual GPS machine to send PR2.	Radians - Default 0.05236	
		Example - $ HEading Re-port Interval = 0.05236 The dual GPS machine must change heading 0.05236 radians to send PR2.		

Proximity Awareness Fleet Office Configuration

MineStar Supervisor Configuration

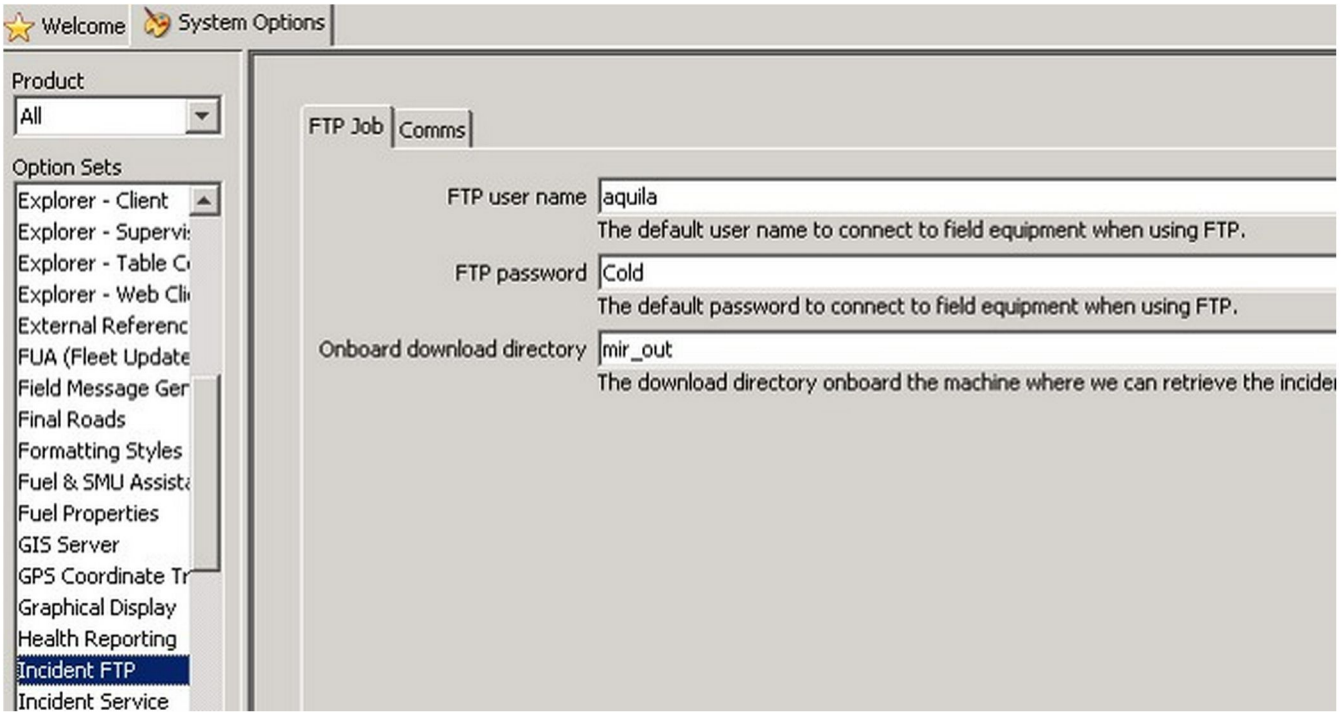

Illustration 77 g06277548

1. Navigate to “System Options” .

a. Under the “Product” listing select “All” .

b. Under “Option Sets” select “Incident FTP” .

c. Select “FTP Job” .

2. In the “FTP Job” tab type “aquila” in the “FTP User Name” .

3. In the “FTP Job” tab type “cold” in the “FTP Password” .

Note: Data sent via ftp will go to: D:\mstarFiles \systems\main\data\Incedentdata.

MineStar Client Configuration

Note: Making sure that “Machine Class” settings are correct is key to proper configuration of Proximity Awareness. Several of these items will be required for PL671 configuration, below is a reference of the fields that will need to be updated and or validated in Fleet MineStar Office. Refer to Fleet MineStar manuals for further details.

Machine Class Configuration

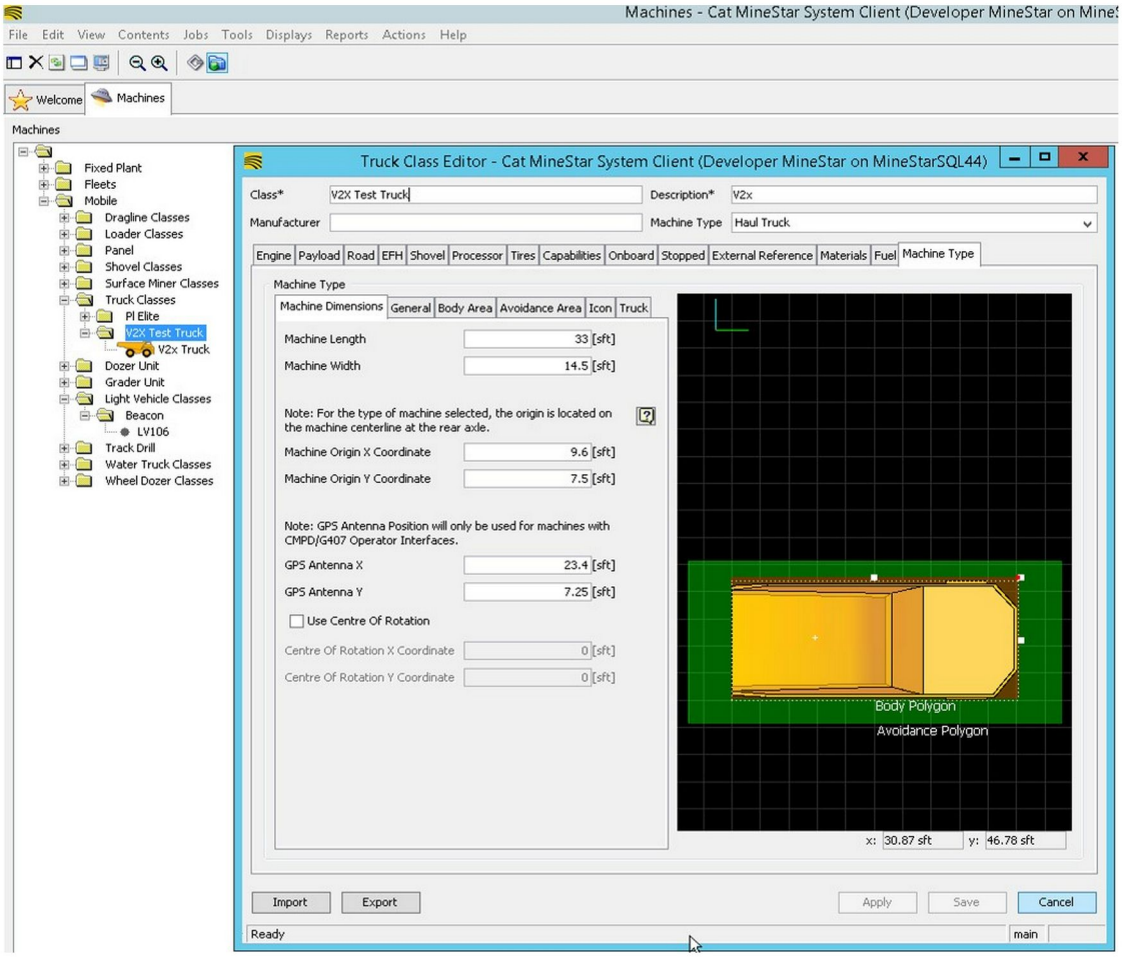

Illustration 78 g06308707

Navigate to “Contents” , “Pit Link” , “Machine Finder” , “Machine Class” , then “Machine Type” . Validate the following information:

- Machine Dimensions
- Body Area
- Avoidance Area

Machine Dimensions

On the “Machine Dimensions” tab, validate or enter the following information:

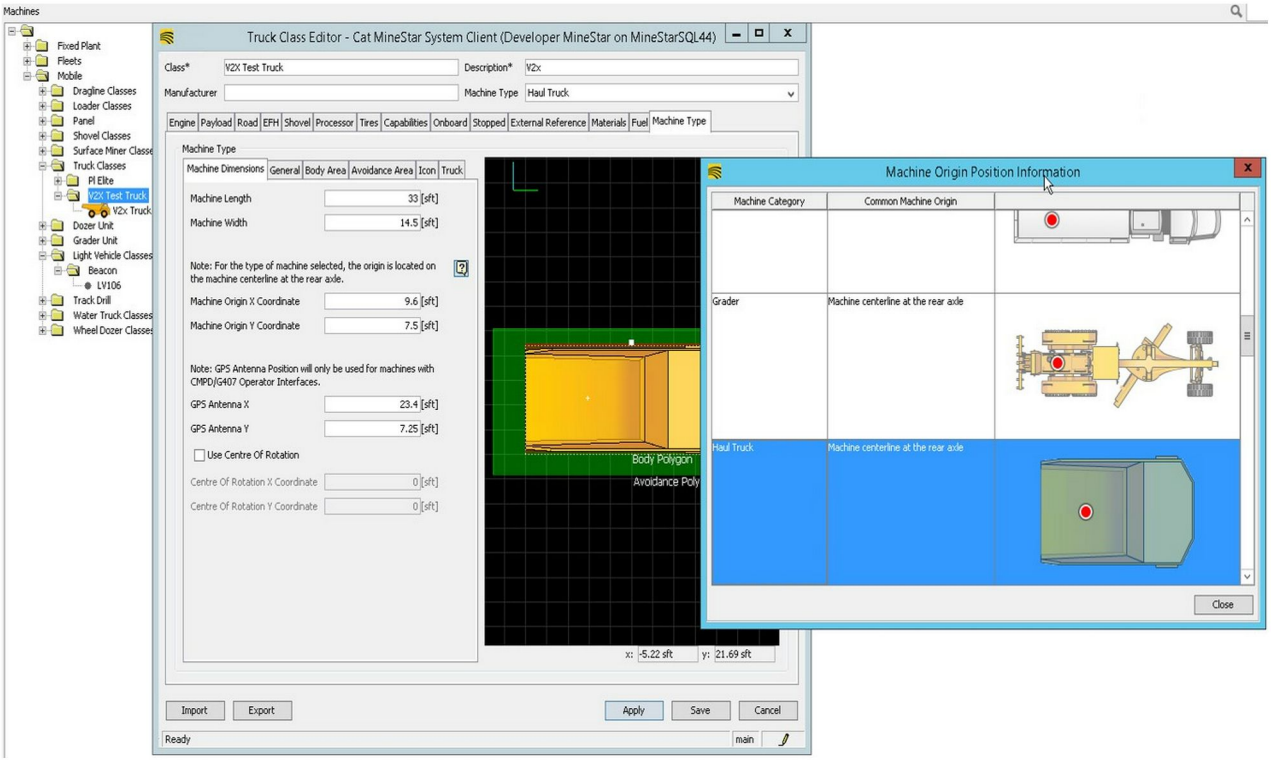

Illustration 79 g06308712

- Machine length and width.
- Machine origin X and Y coordinate
- GPS Antenna X/Y

Note: Hovering over the question mark icon will help to determine origin location of different machine types.

For more machine measurement help, refer to Special Instruction, REHS9127, "Machine Dimension Measure Up Procedure for Cat Detect Proximity Awareness".

Body Area

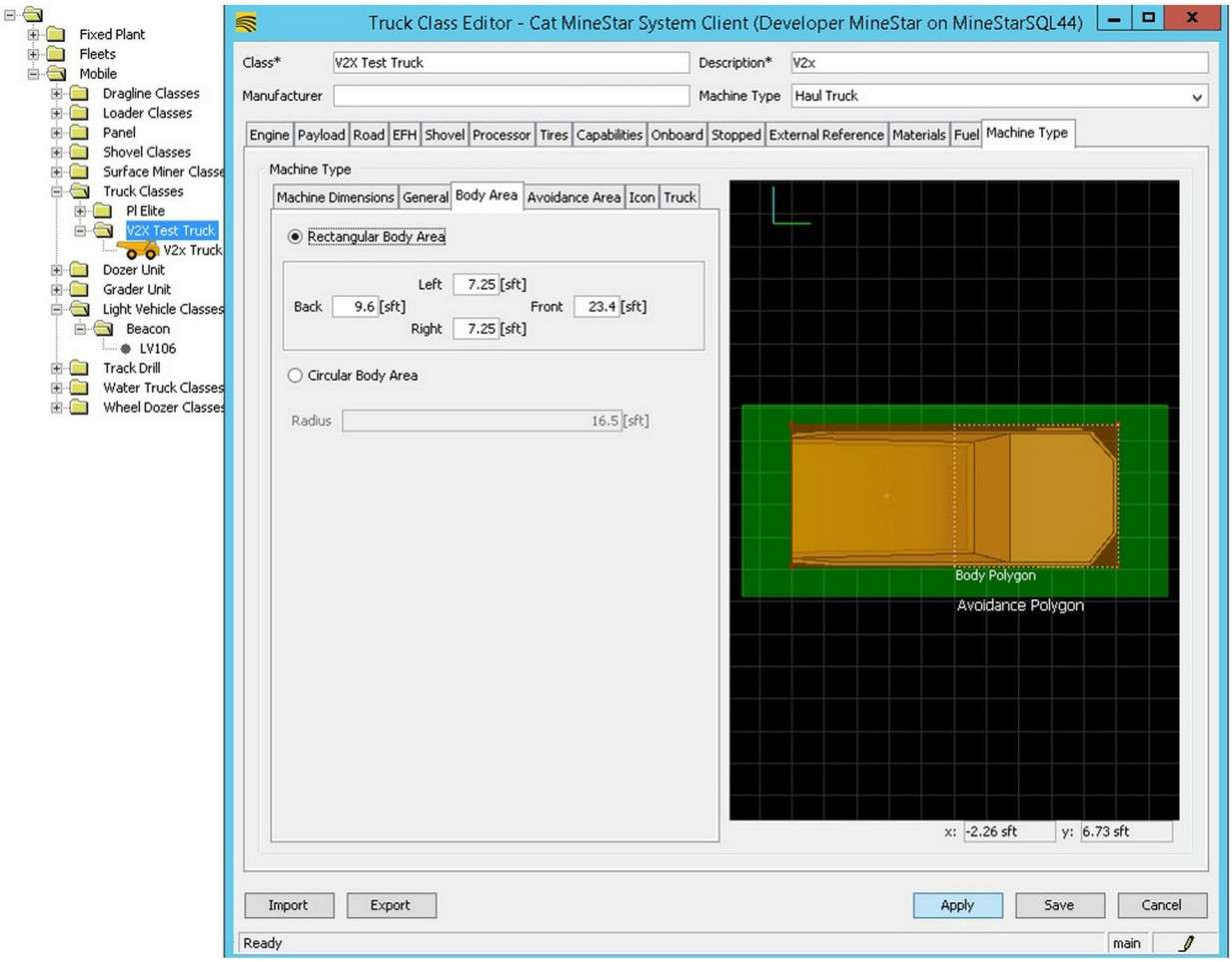

Illustration 80 g06308731

On the “Body Area” tab, enter the back, left, front, and right area regions.

For machines that pivot on a central axis, select “Circular Body Area” . Enter the radius of the machine.

Avoidance Area

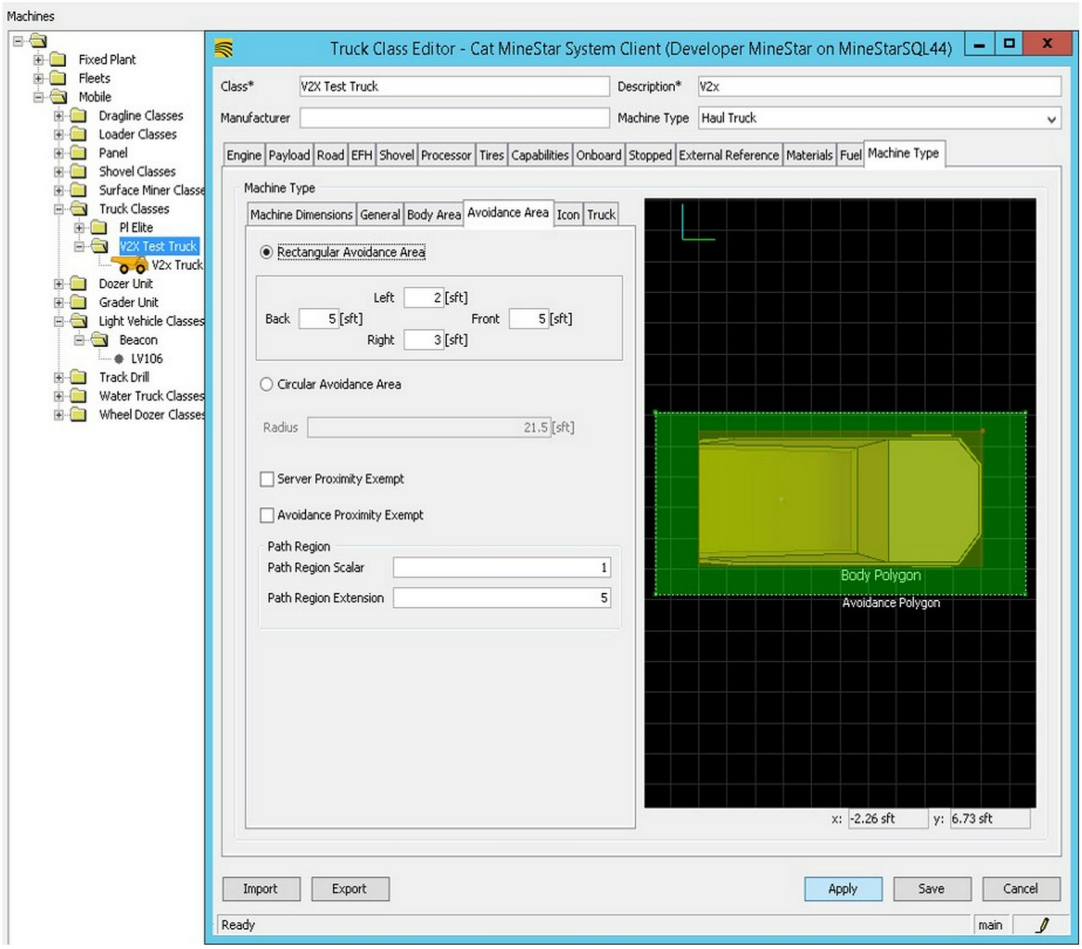

Illustration 81 g06308739

Working with the customer to define the avoidance area is critical as it will have direct effect on the frequency of the alarming and incidents the system will report against. The avoidance area may have to be adjusted several times during deployment.

Server Proximity Exempt – When setting the machine (typically on a Loading Tool or Crusher), this setting will ignore the avoidance zone of a machine (typically a Truck) if Avoidance Proximity Exempt is enabled for that class of machine and not generate an incident event for their interaction.

Avoidance Proximity Exempt – When setting the machine (typically a Truck) this setting will ignore the avoidance areas for the machines (typically a Crusher or Loading Tool) that have Server Proximity Exempt enabled and will not generate an event for their interactions.

Path Region Scalar – Time value used to adjust the “Projected Avoidance Zone” based on current speed of the machine.

Path Region Extension – Distance that is added to the avoidance area in the machines current direction of travel.

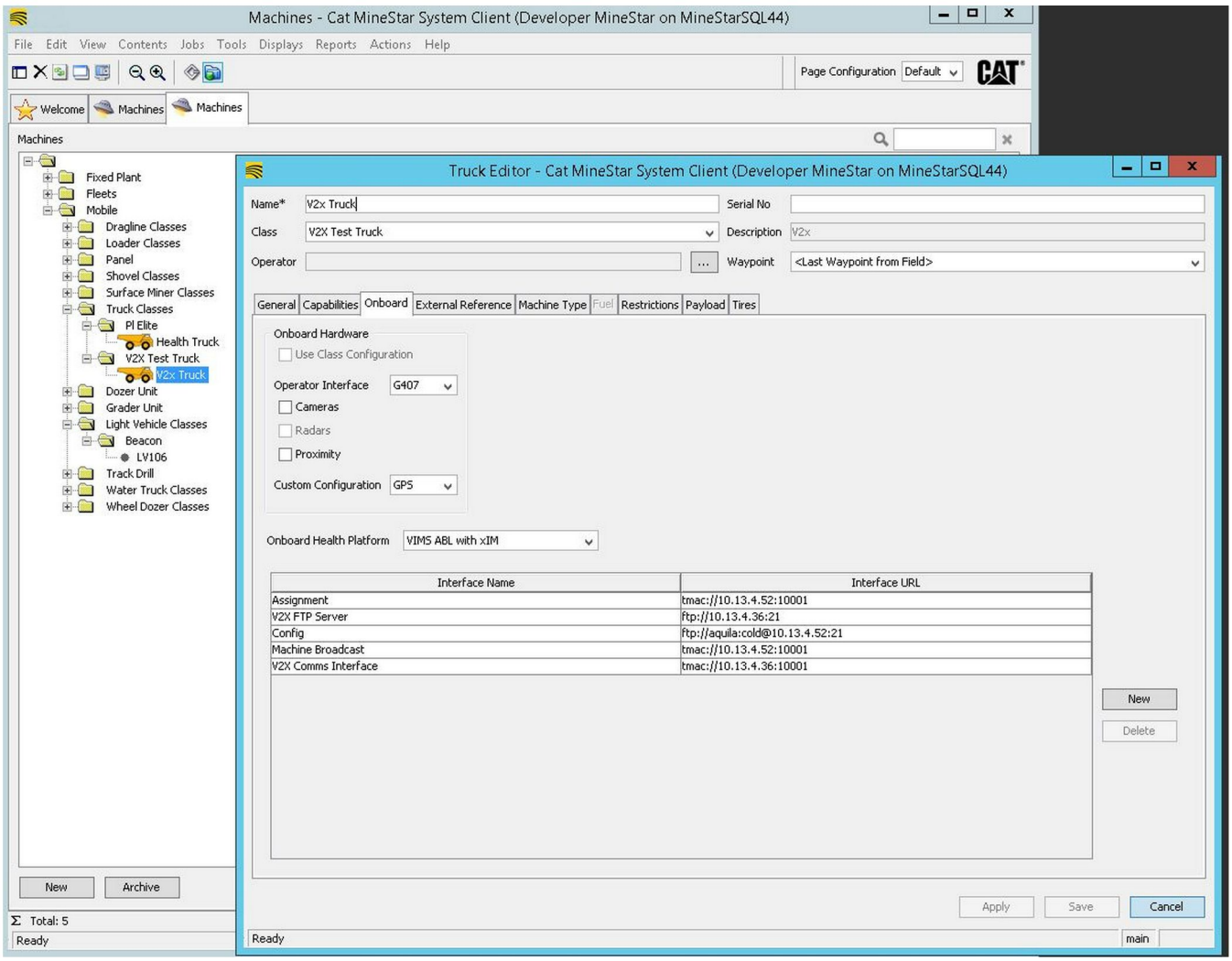

Illustration 82 g06277592

1. Navigate to “Contents” , then “Pit Link” , followed by “Machine Finder” , then “Machine” , and finally “Onboard” .
2. Verify that the correct user interface has been selected.
3. Verify the correct “Configuration” and “Custom Configuration” has been selected.
4. Add the “V2x FTP Server” address (ftp://xxx.xxx.xxx.xxx:21) to the interface list.
5. Add the “V2x Comms Interface” address (Tmac://xxx.xxx.xxx.xxx:10001) to the interface list.
6. Add the “Config” address (ftp://aquila:cold@xxx.xxx.xxx.xxx:21). This address is required for sending MineStar files to the G407 display.
7. Add the “Assignment” address (tmac://xxx.xxx.xxx.xxx) This is required for activating files sent to the MineStar display.

PL671 Over the Air Flashing Using Fleet Office

Note: Over the Air Flashing can only be done using Fleet Office 5.2 or newer. Contact MineStar support if Over the Air Flashing is required for a Fleet Office version older than 5.2.

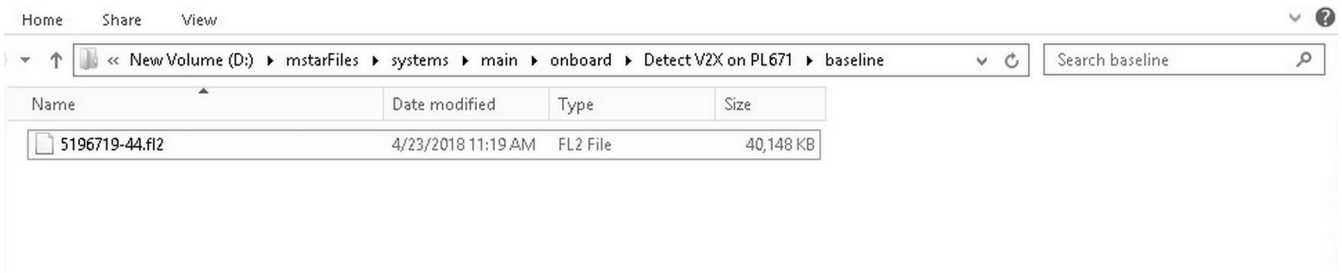

Illustration 83 g06309064

1. Copy the “PL671.fl2” file into the baseline folder. To access the baseline folder click “mstarfiles” , “systems” , “main” , “onboard” , “Detect V2x on PL671” , and then “baseline” .

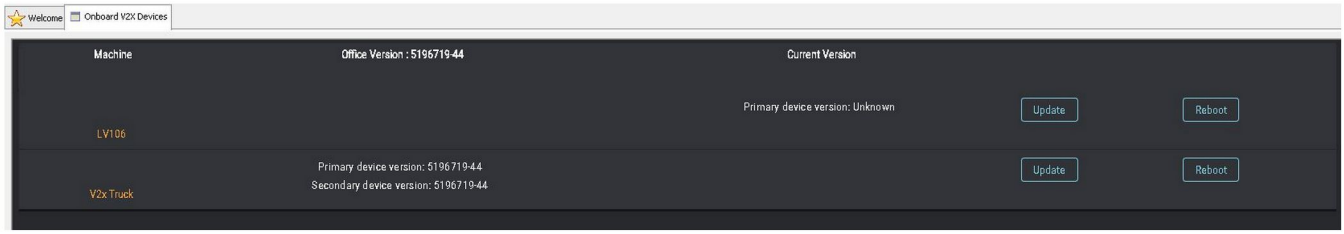

Illustration 84 g06309146

2. Open a Fleet MineStar client. Navigate to “Contents” , “Pit Link” , then “Onboard V2x Devices” . Inside the “Onboard V2x Devices” page, select the PL671 primary device that needs to be flashed to a new version then click “Update” .

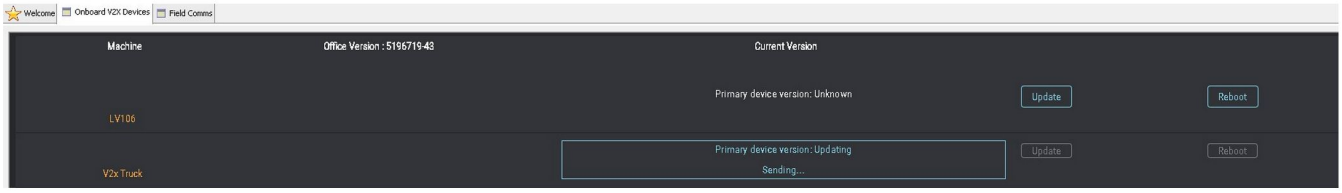

Illustration 85 g06309150

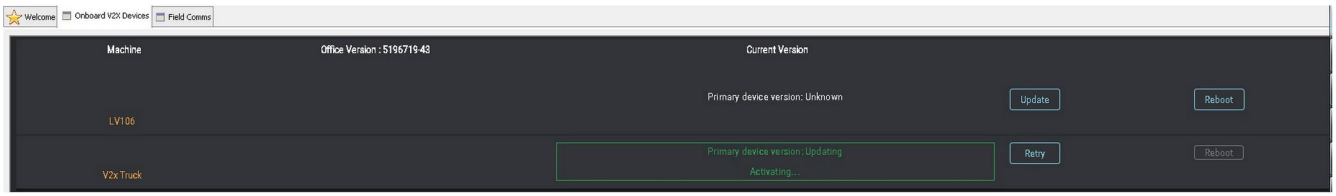

Illustration 86 g06309183

3. During the flash process, the page will update with notifications of when the files are “Sending” and “Activating” files on the PL671 primary device.

PL671 Indicator Lights

The PL671 is a V2x module used on Cat Detect systems. The module contains 4 LED indicator lights that indicate the following scenarios:

Green LED

The purpose of the green LED is to indicate when the radio is powered ON or OFF.

Green LED OFF – Indicates that the radio is not powered.

Green LED ON – Indicates that the radio is powered properly and is ON.

Green LED Blinking – The green LED will blink when a fault has been detected that will prevent the application firmware from running. If the green LED is blinking, contact your Caterpillar dealer.

Orange LED - GPS

The purpose of the orange LED is to indicate whether a GPS fix has been made.

Orange LED OFF – The orange LED will be OFF when a GPS antenna is not found by the radio.

Orange LED ON – The GPS antenna is working properly, and can see enough GPS satellites to determine a good location fix.

Orange LED Blinking – The orange LED will have a constant blinking status when the GPS antenna is working properly, however not enough GPS satellites are viewable to get a good GPS location fix. If a blinking orange LED persists, contact your Caterpillar dealer.

Yellow LED - DSRC Communications

The purpose of the yellow LED is to indicate that a connection to the communication network, through DSCR, is being attempted. This action does not indicate that there is an appropriate signal, only that the hardware is working properly, and capable of making a connection given that a signal is present.

Yellow LED OFF – Indicates no DSRC communications available.

Yellow LED Blinking – Indicates that there is a DSRC fault and the device is unable to launch communications.

Blue LED - Ethernet

The purpose of the blue LED is to determine when Ethernet connections are present.

Illustration 87 g03738018

Blue LED OFF – Indicates no Ethernet link established.

Blue LED Blinking – The blue LED will blink to indicate Ethernet activity.

Blue LED ON – The blue LED will turn ON when the module has established an Ethernet link. Refer to Illustration 87.

■