

# OHT-SEM [SDI M라인]

Scenario Specification  
Version 1.1

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## Document Control

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1	2017.11.23	Soonhan.Lee	1.0	
2	2017.11.23	Soonhan.Lee	1.1	2.7.4 Vehicle Down (after vehicle departed from source) 수정(p31)

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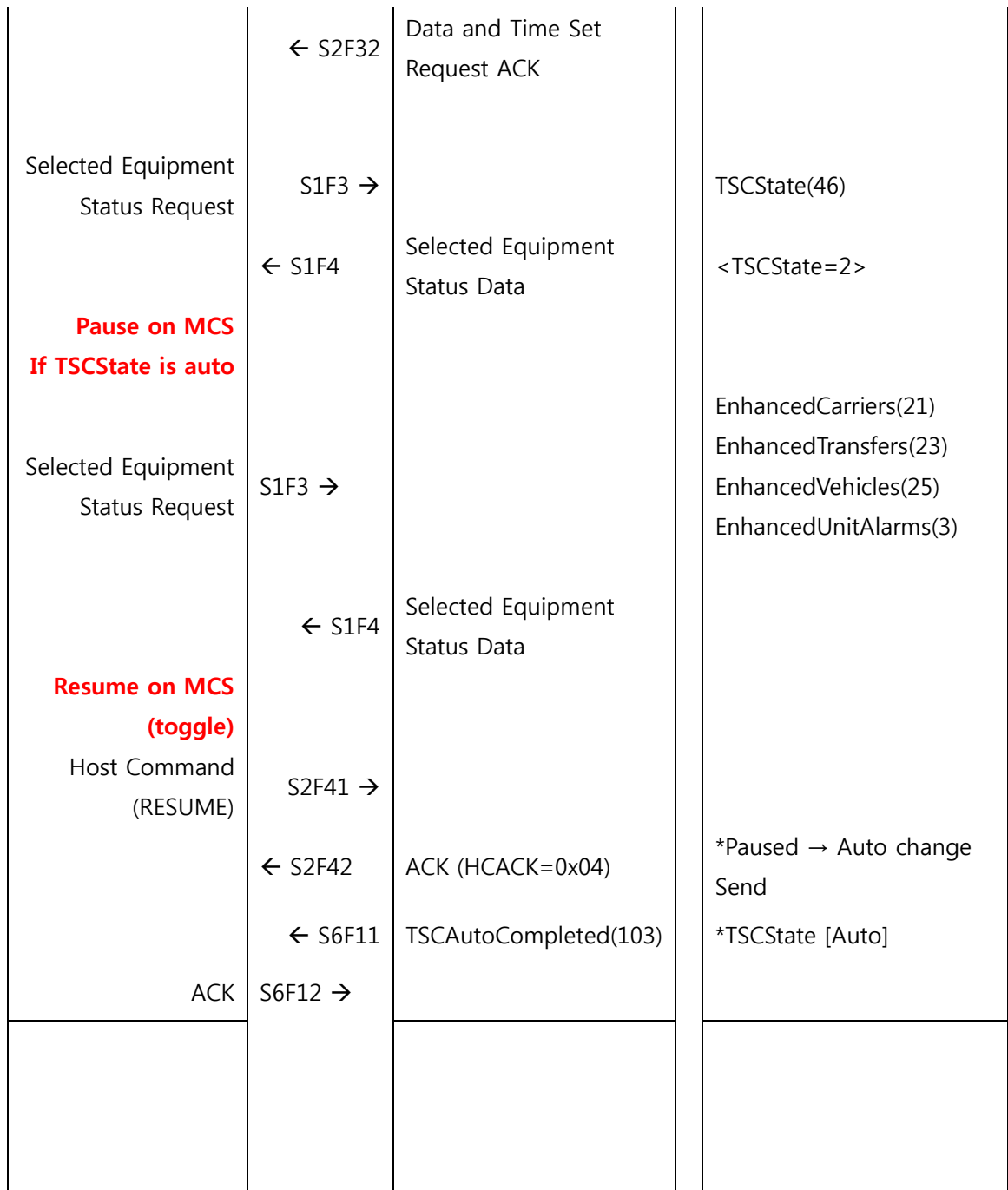
# 1. Operation Scenario

## 1.1 Initialize

1. a) Establish communication → isTSCStatePaused → reconcile → resume command
- b) Establish communication → isTSCStateNotPaused → pause command
- c) TSCStatePaused → reconcile → resume command

### 1.1.1 OFFLINE → ONLINE

HOST		TSC Controller	Comments
<b>Connect on MCS (toggle)</b> Establish Communications Request	S1F13 →  ← S1F14	Establish Communications ACK	*Online Attempt  <COMMACK=0,1>
COMMACK = 1			
Establish Communications Request	S1F13 →  ← S1F14	Establish Communications ACK	Until COMMACK=0
COMMACK = 0			
Request ON-LINE	S1F17 →  ← S1F18	ON-LINE Acknowledge	*Mode Change by Host <ONLACK=0,1,2>
ONLACK = 1			
IamHere Request ON-LINE	← S1F1 S1F2→ S1F17 → ← S1F18	AreyouThere  ON-LINE Acknowledge	*Mode Change by Host <ONLACK=0 or 2>
ONLACK = 0 or 2			
Data and Time Set Request	S2F31 →		



### 1.1.2 ONLINE → OFFLINE

HOST	TSC Controller	Comments
<p><b>Pause on MCS (toggle)</b></p>		
Host Command (PAUSE)	S2F41 →	
	← S2F42	ACK (HCACK=0x04)
	← S6F11	TSCPauseInitiated(107)
ACK	S6F12 →	
	← S6F11	TSCPauseCompleted(105)
ACK	S6F12 →	
<p><b>Disconnect on MCS (toggle)</b></p>		
Request OFF-LINE	S1F15 →	
	← S1F16	*OFF-LINE Change by Host
	← S6F11	*OFF-LINE Change Report
ACK	S6F12 →	
	←	seperate.req

## 1.2 REMOTE COMMAND

### 1.2.1 PAUSE Command

HOST		TSC Controller	Comments
Host Command (PAUSE)	S2F41 →		*Host want to TSC state change to PAUSE
	← S2F42	ACK (HACK=0x04)	
	← S6F11	TSCPauseInitiated(107)	*TSCState [Pausing]
ACK	S6F12 →		
	← S6F11	TSCPauseCompleted (105)	*TSCState [Paused]
ACK	S6F12 →		

### 1.2.2 RESUME Command

HOST		TSC Controller	Comments
Host Command (RESUME)	S2F41 →		*Host want to TSC state change to AUTO
	← S2F42	ACK (HACK=0x04)	
	← S6F11	TSCAutoCompleted (103)	*TSC State [Auto]
ACK	S6F12 →		

### 1.2.3 CANCEL Command

HOST		TSC Controller	Comments
Host Command (CANCEL)	S2F41 →		*Host want to cancel command transferred to TSC Controller
	← S2F42	ACK (HACK=0x04)	
	← S6F11	TransferCancelInitiated(206)	

ACK	S6F12 →	TransferCancel Completed(204)	
	← S6F11		
ACK	S6F12 →		

#### 1.2.4 ABORT Command

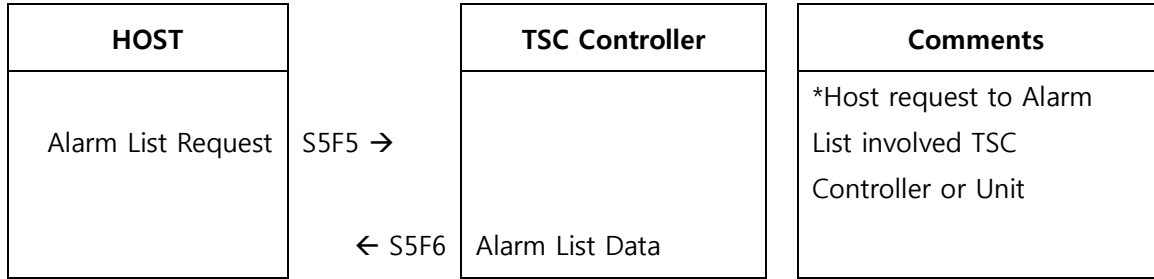
HOST		TSC Controller	Comments
Host Command (ABORT)	S2F41 →		*Host want to abort command TSC CONTROLLER acting
	← S2F42	ACK (HACK=0x04)	
	← S6F11	TransferAbortInitiated(203)	
ACK	S6F12 →		
	← S6F11	TransferAbort Completed(201)	
ACK	S6F12 →		

#### 1.2.5 UPDATE Command

HOST		TSC Controller	Comments
Host Command (UPDATE)	S2F41 →		*Host want update command to Carrier being transferred to TSC Controller
	← S2F42	ACK (HACK=0x04)	※ acknowledge for UPDATE
	← S6F11	TransferUpdate Completed(212)	*succeeded
ACK	S6F12 →		
	← S6F11	TransferUpdateFailed (213)	*failed
ACK	S6F12 →		

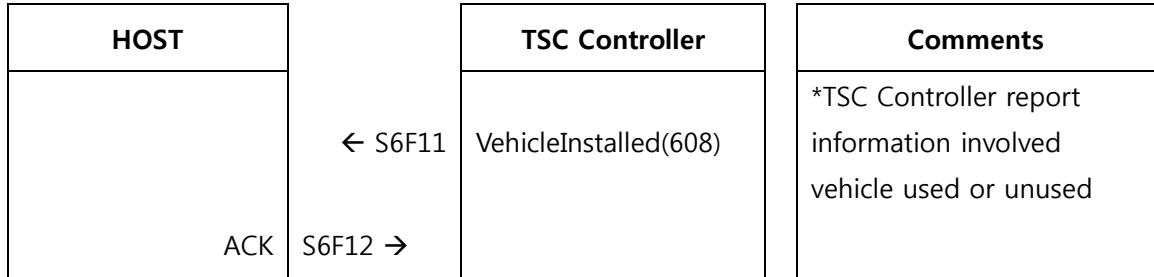
### 1.3 INFORMATION REQUEST

#### 1.3.1 Alarm List REQUEST

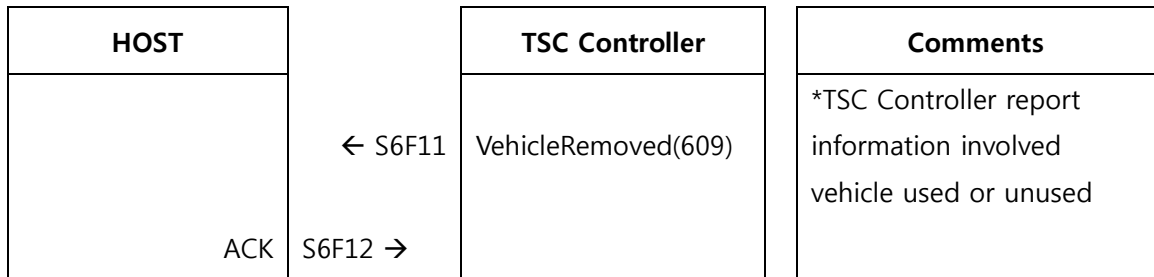


## 1.4 Vehicle UNIT EVENT

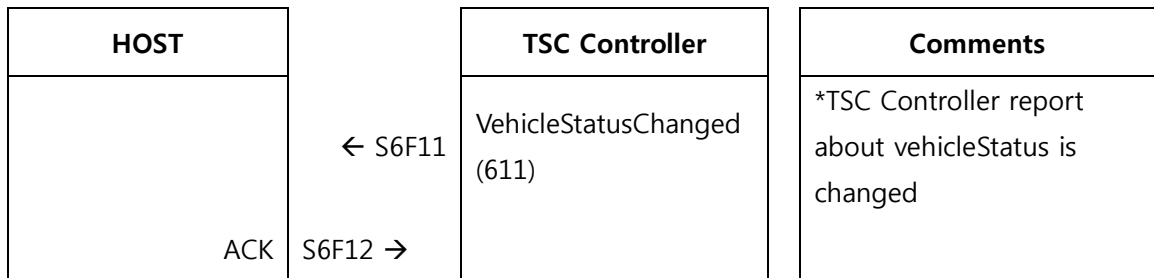
### 1.4.1 VehicleInstalled



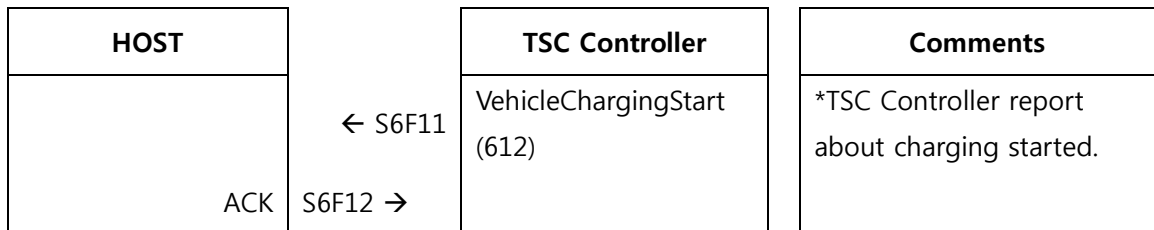
### 1.4.2 VehicleRemoved



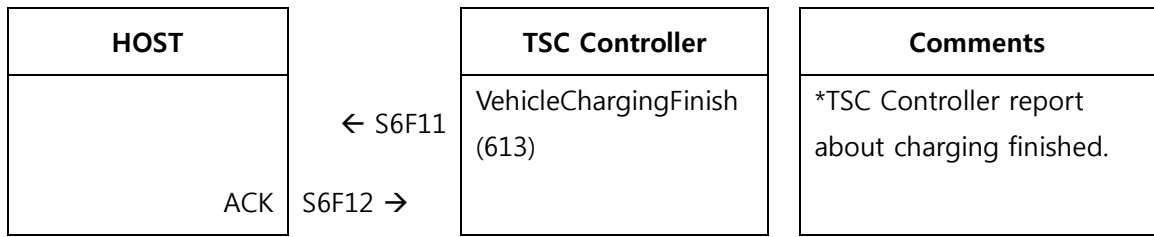
### 1.4.3 VehicleStatusChanged



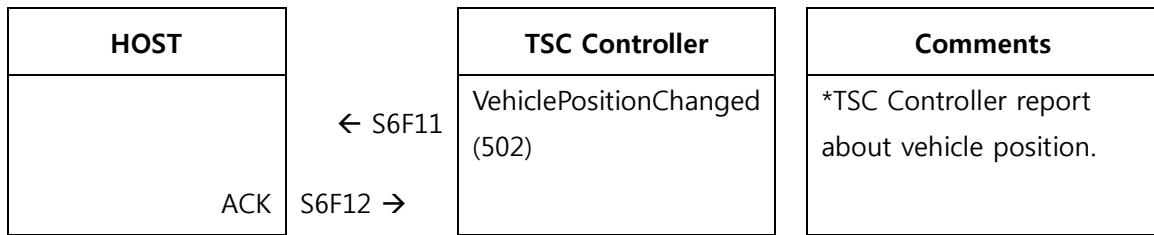
### 1.4.4 VehicleChargingStart



### 1.4.5 VehicleChargingFinish



#### 1.4.8 VehiclePositionChanged



## 1.5 TRANSFER COMMAND

### 1.5.1 STK/EQ → STK/EQ

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	TransferInitiated(208)	
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
	← S6F11	VehicleArrived(601) (Source)	
ACK	S6F12 →		
	← S6F11	Transferring(211)	
ACK	S6F12 →		
	← S6F11	VehicleAcquireStarted(602)	
ACK	S6F12 →		
	← S6F11	CarrierInstalled(301)	
ACK	S6F12 →		
	← S6F11	VehicleAcquireCompleted(603)	*Carrier loaded on VEHICLE
ACK	S6F12 →		
	← S6F11	VehicleDeparted(605)	
ACK	S6F12 →		
	← S6F11	VehicleArrived(601) (Dest)	
ACK	S6F12 →		
	← S6F11	VehicleDepositStarted(606)	

ACK	S6F12 →		
	← S6F11	CarrierRemoved(302)	
ACK	S6F12 →		
	← S6F11	VehicleDepositCompleted(607)	
ACK	S6F12 →		
	← S6F11	VehicleUnassigned(610)	
ACK	S6F12 →		
	← S6F11	TransferCompleted(207)	
ACK	S6F12 →		



## 2 ABNORMAL SCENARIO

### 2.1 CANCEL

#### 2.1.1 Cancel (Normal)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	TransferInitiated(208)	
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
Host Command (CANCEL)	S2F41 →		
	← S2F42	ACK (HCACK=0x04)	
	← S6F11	TransferCancelInitiated (206)	
ACK	S6F12 →		
	← S6F11	TransferCancelCompleted(204)	
ACK	S6F12 →		
	← S6F11	VehicleUnassigned(610)	
ACK	S6F12 →		

### 2.1.2 Cancel (Fail)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HACK=0x04)	
	← S6F11	TransferInitiated(208)	
ACK	S6F12 →		
	.		
	.		
	.		
	← S6F11	VehicleAcquireStarted(602)	
ACK	S6F12 →		
Host Command (CANCEL)	S2F41 →		
	← S2F42	ACK (HACK=0x04)	
	← S6F11	TransferCancelInitiated(206)	
ACK	S6F12 →		
	← S6F11	TransferCancelFailed(205)	
ACK	S6F12 →		
Host Command (ABORT)	S2F41 →		
	← S2F42	ACK (HACK=0x04)	

## 2.2 ABORT

### 2.2.1 Abort (Normal)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	TransferInitiated(208)	
	ACK S6F12 →		
	.		
	.		
	.		
	← S6F11	VehicleAcquireStarted(602)	
	ACK S6F12 →		
	Host Command (ABORT)	S2F41 →	
← S2F50		ACK (HCACK=0x04)	
← S6F11		TransferAbortInitiated(203)	
ACK S6F12 →			
← S6F11		VehicleUnassigned(610)	* vehicle is waiting for next transfer command with carrier
ACK S6F12 →			
Enhanced Remote Command	← S6F11	TransferAbortCompleted(201)	
	ACK S6F12 →		
	S2F49 →		* send transfer command to abort location
	← S2F50	ACK (HCACK=0x04)	

### 2.2.2 Abort (Fail)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	.		
	.		
	.		
	← S6F11	VehicleArrived(601) (Dest)	
ACK	S6F12 →		
	← S6F11	VehicleDepositStarted(606)	
ACK	S6F12 →		
Host Command (ABORT)	S2F41 →		
	← S2F42	ACK (HCACK=0x04)	
	← S6F11	TransferAbortInitiated(203)	
ACK	S6F12 →		
	← S6F11	TransferAbortFailed(202)	TSC Controller is going to process, after this event
ACK	S6F12 →		Normal Transfer
	.		
	.		
	.		

## 2.3 TRANSPORT COMMAND DELETE (ON TSC)

### 2.3.1 Transport Command Delete (TransportCommand State: NotActive)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	.		
	.		
	.		
	← S6F11	<b>Transfer Command Delete (toggle)</b> VehicleArrived(601) (Source)	
ACK	S6F12 →		
	← S6F11	OperatorInitiatedAction(501)	CommadType = "CANCEL"
ACK	S6F12 →		
	← S6F11	TransferCancelCompleted(204)	
ACK	S6F12 →		
	← S6F11	VehicleUnassigned(610)	
ACK	S6F12 →		

### 2.3.2 Transport Command Delete (TransportCommand State: Active)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	.		
	.		
	← S6F11	Transferring(211)	
ACK	S6F12 →	<b>Transfer Command Delete (toggle)</b>	"
	← S6F11	OperatorInitiatedAction(501)	*CommandType="ABORT"
ACK	S6F12 →		
	← S6F11	VehicleUnassigned(610)	
ACK	S6F12 →		
	← S6F11	TransferAbortCompleted(201)	*CarrierLoc = "vehicle id"
ACK	S6F12 →	<b>Manual Transport (on TSC) (toggle)</b>	
	← S6F11	OperatorInitiatedAction(501)	*CommandType = "TRANSFER"
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
	.		
	.		
	.		Normal process after that

## 2.4 CARRIER REMOVED

### 2.4.1 Carrier on VEHICLE Removed with Manual

HOST		TSC Controller	Comments
		<b>TSC CONTROLLER Alarm</b> Remove Carrier Manually	
		<b>Transfer Command Delete (toggle)</b>	
	← S6F11	OperatorInitiatedAction(201)	*CommandType = "ABORT"
ACK	S6F12 →		
	← S6F11	TransferAbortCompleted(201)	*CarrierLoc = "vehicle stage id"
ACK	S6F12 →		
		<b>CarrierRemoved(302) (on TSC) (toggle)</b>	
	← S6F11	CarrierRemoved(302)	
ACK	S6F12 →		

## 2.5 DESTINATION CHANGE

### 2.5.1 Destination change

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	TransferInitiated(208)	
ACK	S6F12 →		
	:		
	:		
ABORT(Transfer Command State is Active) or CANCLE(Transfer Command State is NotActive)			Refer to 2.1 CANCEL, 2.2 ABORT scenarios.
Enhanced Remote Command	S2F49 →		Transport to new destination
	← S2F50	ACK (HCACK=0x04)	
	.		
	.		
	.		Transport to new destination

## 2.6 ALARM

### 2.6.1 Alarm Set/Clear

HOST		TSC Controller	Comments
		<b>Alarm</b>	
	← S6F11	UnitAlarmSet(702)	
ACK	S6F12 →		
	← S5F1	Alarm Report Send	
Alarm Report ACK	S5F2 →		
	.		
	.	<b>Alarm Clear</b>	
	.		
	← S6F11	UnitAlarmCleared(701)	
ACK	S6F12 →		
	← S5F1	Alarm Report Send	
Alarm Report ACK	S5F2 →		

## 2.6.2 Alarm Set/Clear Moving VEHICLE

HOST		TSC Controller	Comments
		<b>Alarm</b>	
	← S5F1	Alarm Report Send	
Alarm Report ACK	S5F2 →		
	← S6F11	AlarmSet(102)	
ACK	S6F12 →		
	← S6F11	UnitAlarmSet(702)	
ACK	S6F12 →		
	← S6F11	TransferPaused(209)	
ACK	S6F12 →		
	.		
	.	<b>Alarm Clear</b>	
	.		
	← S6F11	UnitAlarmCleared(701)	
ACK	S6F12 →		
	← S6F11	AlarmCleared(101)	
ACK	S6F12 →		
	← S5F1	Alarm Report Send	
Alarm Report ACK	S5F2 →		
	← S6F11	TransferResumed(210)	
ACK	S6F12 →		

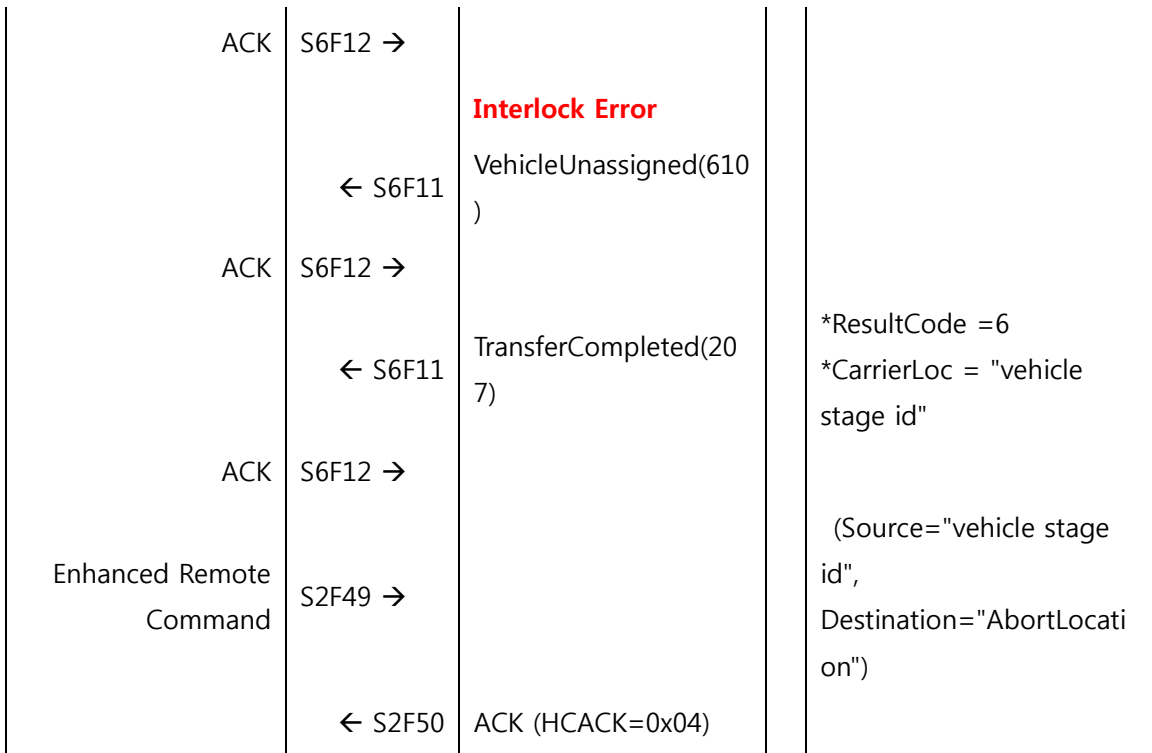
## 2.7 ALTERNATE TRANSFERRING

### 2.7.1 Carrier Loading Port Interlock Time Error at Source

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
		← S6F11	TransferInitiated(208)
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
	← S6F11	VehicleArrived(601) (Source)	
ACK	S6F12 →		
	← S6F11	Transferring(211)	
ACK	S6F12 →		
	← S6F11	VehicleAcquireStarted(602)	
ACK	S6F12 →		
		<b>Interlock Error</b>	
	← S6F11	VehicleUnassigned(610)	
ACK	S6F12 →		
	← S6F11	TransferCompleted(207)	* ResultCode = 5
ACK	S6F12 →		

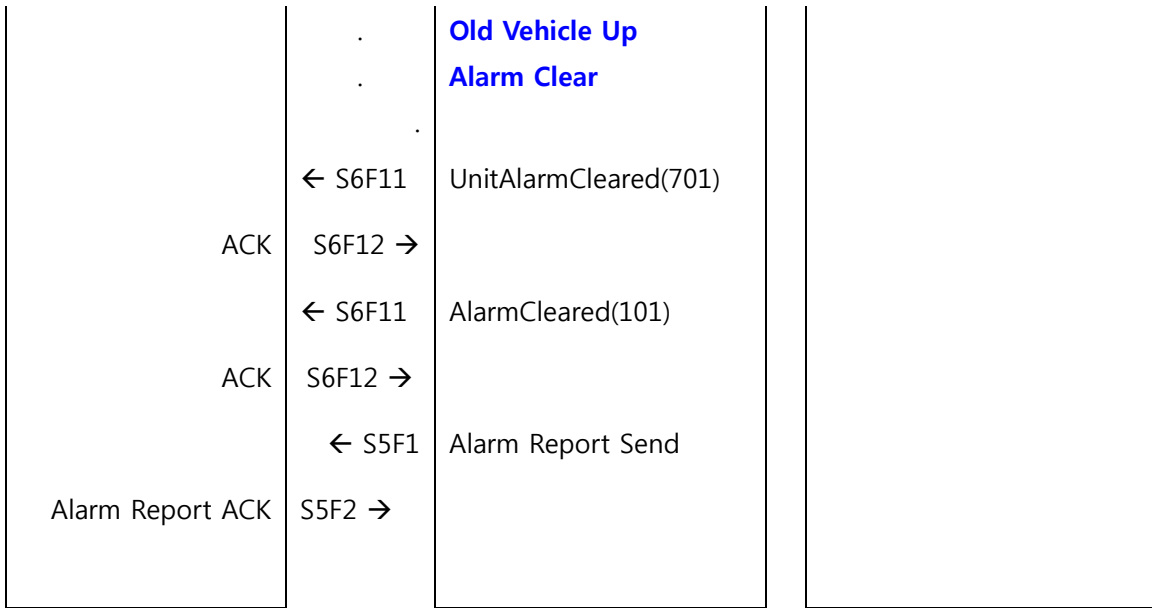
## 2.7.2 Carrier Unloading Port Interlock Time Error at Dest

HOST		TSC Controller	Comments
	.		
	.		
	.		
	← S6F11	VehicleArrived(601) (Dest)	
ACK	S6F12 →		
	← S6F11	VehicleDepositStarted( 606)	
ACK	S6F12 →		
		<b>Interlock Error</b>	
	← S6F11	VehicleUnassigned(610 )	
ACK	S6F12 →		
	← S6F11	TransferCompleted(20 7)	*ResultCode =6 *CarrierLoc = "vehicle stage id"
ACK	S6F12 →		
RETRY			
Enhanced Remote Command	S2F49 →		*Source="vehicle stage id"
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
	← S6F11	Transferring(211)	
ACK	S6F12 →		
	← S6F11	VehicleArrived(601) (Dest)	
ACK	S6F12 →		
	← S6F11	VehicleDepositStarted( 606)	



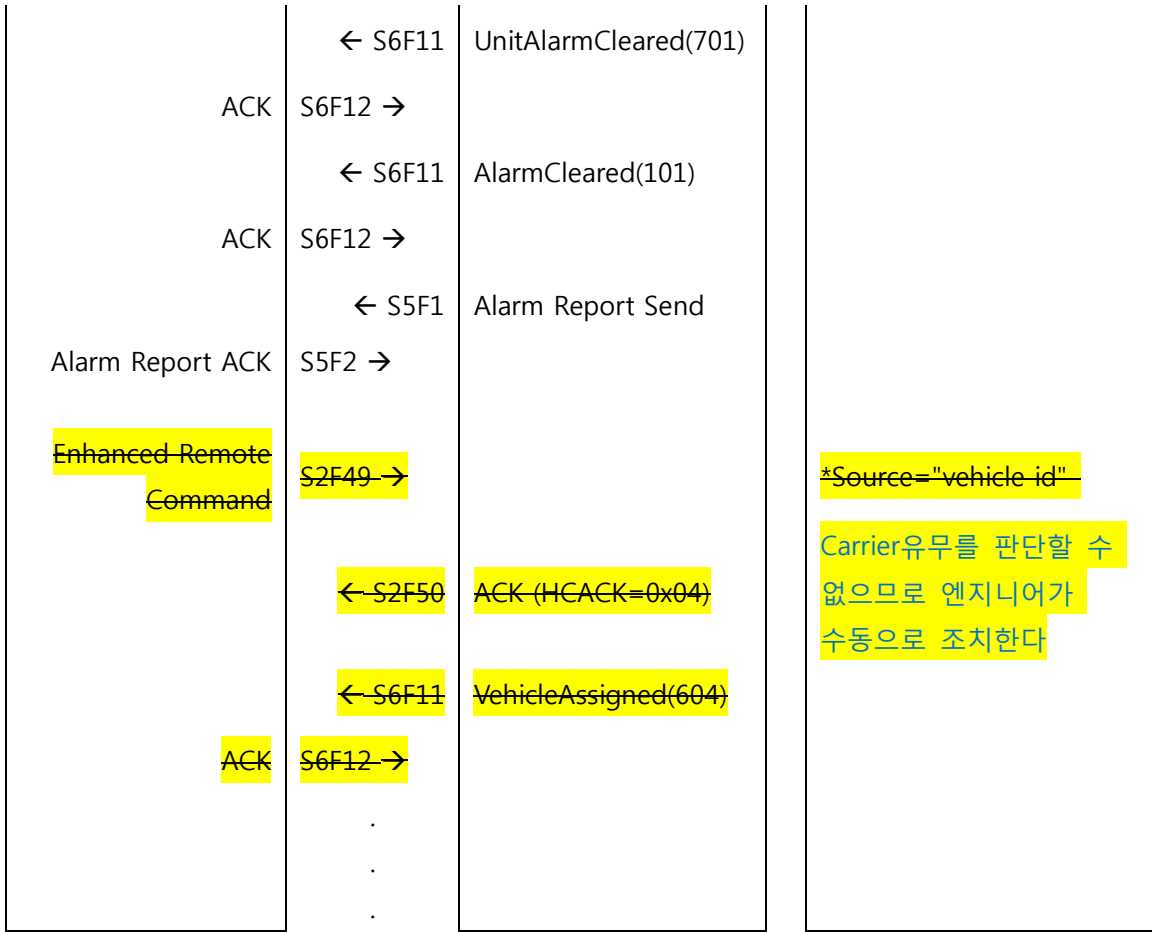
### 2.7.3 Vehicle Down (before vehicle arrived at source)

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	TransferInitiated(208)	
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
		<b>Vehicle Down</b>	
	← S5F1	Alarm Report Send	
Alarm Report ACK	S5F2 →		
	← S6F11	AlarmSet(102)	
ACK	S6F12 →		
	← S6F11	UnitAlarmSet(702)	
ACK	S6F12 →		
	← S6F11	TransferPaused(209)	
ACK	S6F12 →		
		<b>Vehicle Job 이관</b>	
	← S6F11	VehicleUnassigned(610)	<b>Old Vehicle</b>
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	<b>New Vehicle</b>
ACK	S6F12 →		
	← S6F11	TransferResumed (210)	
ACK	S6F12 →		



### 2.7.4 Vehicle Down (after vehicle departed from source)

HOST		TSC Controller	Comments
	.		
	.		
	.		
	← S6F11	VehicleDeparted(605)	
ACK	S6F12 →		
		<b>Vehicle Down</b>	
	← S5F1	Alarm Report Send	
Alarm Report ACK	S5F2 →		
	← S6F11	AlarmSet(102)	
ACK	S6F12 →		
	← S6F11	UnitAlarmSet(702)	
ACK	S6F12 →		
	← S6F11	TransferPaused(209)	
ACK	S6F12 →		
		<b>Manual Transport (on TSC) (toggle)</b>	
	← S6F11	OperatorInitiatedAction(501)	*CommandType="ABORT"
ACK	S6F12 →		
	← S6F11	TransferAbortCompleted(201)	
ACK	S6F12 →		
	← S6F11	VehicleUnassigned(610)	Manually Unassigned
ACK	S6F12 →		
	:	<b>Vehicle Up Alarm Clear</b>	



## 2.8 TSC CONTROLLER DOWN → UP

### 2.8.1 TSC Controller down → up

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		*① Command
	← S2F50	ACK (HCACK=0x04)	
Enhanced Remote Command	S2F49 →		*② Command
	← S2F50	ACK (HCACK=0x04)	
Enhanced Remote Command	S2F49 →		*③ Command
	← S2F50	ACK (HCACK=0x04)	
	← S6F11	TransferInitiated(208)	
ACK	S6F12 →		
	← S6F11	VehicleAssigned(604)	
ACK	S6F12 →		
	← S6F11	VehicleArrived(601) (Source)	
ACK	S6F12 →		
	.		
	.	<b>TSC Controller Down</b>	
	.		
	← S6F11	Offline	
ACK	S6F12 →		
	←	Separate.req	
	.		
	.		
	.		
Select.req	→		*TSC Controller Startup ① : while Transferring(211), ②/③ : queued

Establish Communications Request	← Select.rsp S1F13 → ← S1F14	Establish Communications ACK	<COMMACK=0,1>
COMMACK = 1			
Establish Communications Request	S1F13 → ← S1F14	Establish Communications ACK	Until COMMACK=0
COMMACK = 0			
Request ON-LINE	S1F17 → ← S1F18	ON-LINE Acknowledge	*Mode Change by Host <ONLACK=0,1,2>
ONLACK = 1			
IamHere Request ON-LINE	← S1F1 S1F2→ S1F17 → ← S1F18	AreyouThere ON-LINE Acknowledge	*Mode Change by Host <ONLACK=0 or 2>
ONLACK = 0 or 2			
Date and Time Set Request	S2F31 → ← S2F32  :  :	Date and Time Set Request ACK	* same scenario(1.1.1 OFFLINE -> ONLINE)

## 2.9 COMMAND

### 2.9.1 Duplication Command

HOST		TSC Controller	Comments
Enhanced Remote Command	S2F49 →		
		← S2F50	ACK (HCACK=0x04)
		← S6F11	TransferInitiated(208)
	ACK	S6F12 →	
		← S6F11	VehicleAssigned(604)
	ACK	S6F12 →	
		← S6F11	VehicleArrived(601) (Source)
	ACK	S6F12 →	
		← S6F11	Transferring(211)
	ACK	S6F12 →	
Enhanced Remote Command	S2F49 →		*duplicated command
		← S2F50	ACK (HCACK=0x05)
		← S6F11	VehicleAcquireStarted(602)
	ACK	S6F12 →	
	.		
	.		
	.		* Command is being processed

## 2.9.2 No Command

HOST		TSC Controller	Comments
In Any Case			
		<p style="color: red; text-align: center;"><b>Alarm</b></p> <p style="color: red; text-align: center;"><b>Manual Transport (on TSC) (toggle)</b></p> <p>← S6F11 OperatorInitiatedAction(501)</p> <p>ACK S6F12 →</p> <p>← S6F11 TransferInitiated(208)</p> <p>ACK S6F12 →</p> <p>← S6F11 VehicleAssigned(604)</p> <p>ACK S6F12 →</p> <p style="text-align: center;">.</p> <p style="text-align: center;">.</p> <p style="text-align: center;">.</p>	<p>* Carrier is on the Vehicle, if no command in 30 sec (Alarm Text : All Port Loading Fail - Manual Handling)</p> <p>*CommandType="TRANSFER"</p> <p>* Normal process after that</p>