Remote Connect/Disconnect

Version 3.0

May 10th, 2010

1 Descriptions of Function

This use case describes how the utility will use the Smart Meter's remote connect and remote disconnect functions.

1.1 Function Name

Remote Connect/Disconnect.

1.2 Function ID

Identification number of the function

1.3 Brief Description

Traditionally, utilities send a metering service person to connect or disconnect the meter. With an AMI system, the connect/disconnect can be performed remotely by switching the remote connect/disconnect (RCD) switch for the following reasons.

- Remote Connect for Move-In
- Remote Connect for Reinstatement on Payment
- Remote Disconnect for Move-Out
- Remote Disconnect for Non-Payment
- Remote Disconnect for Emergency Load Control
- Unsolicited Connect / Disconnect Event

1.4 Narrative

A remote disconnect is issued in the ***Customer Information System (CIS)*** for any reason. The message is sent to the ***AMI Head-End*** and routed to the appropriate smart meter. When the message is received at the ***NIC ESP***, it is converted and sent on to the ***Meter Metrology Board*** where the board causes the internal meter disconnect relay and sends a confirmation back to the ***NIC ESP*** to the ***AMI Head-End***. The ***AMI Head-End***

sends the confirmation to the ***CIS*** to confirm it for the ***Customer Service Representative (CSR)*** and to the ***Operational Data Store (ODS)*** where it is logged as a meter event.

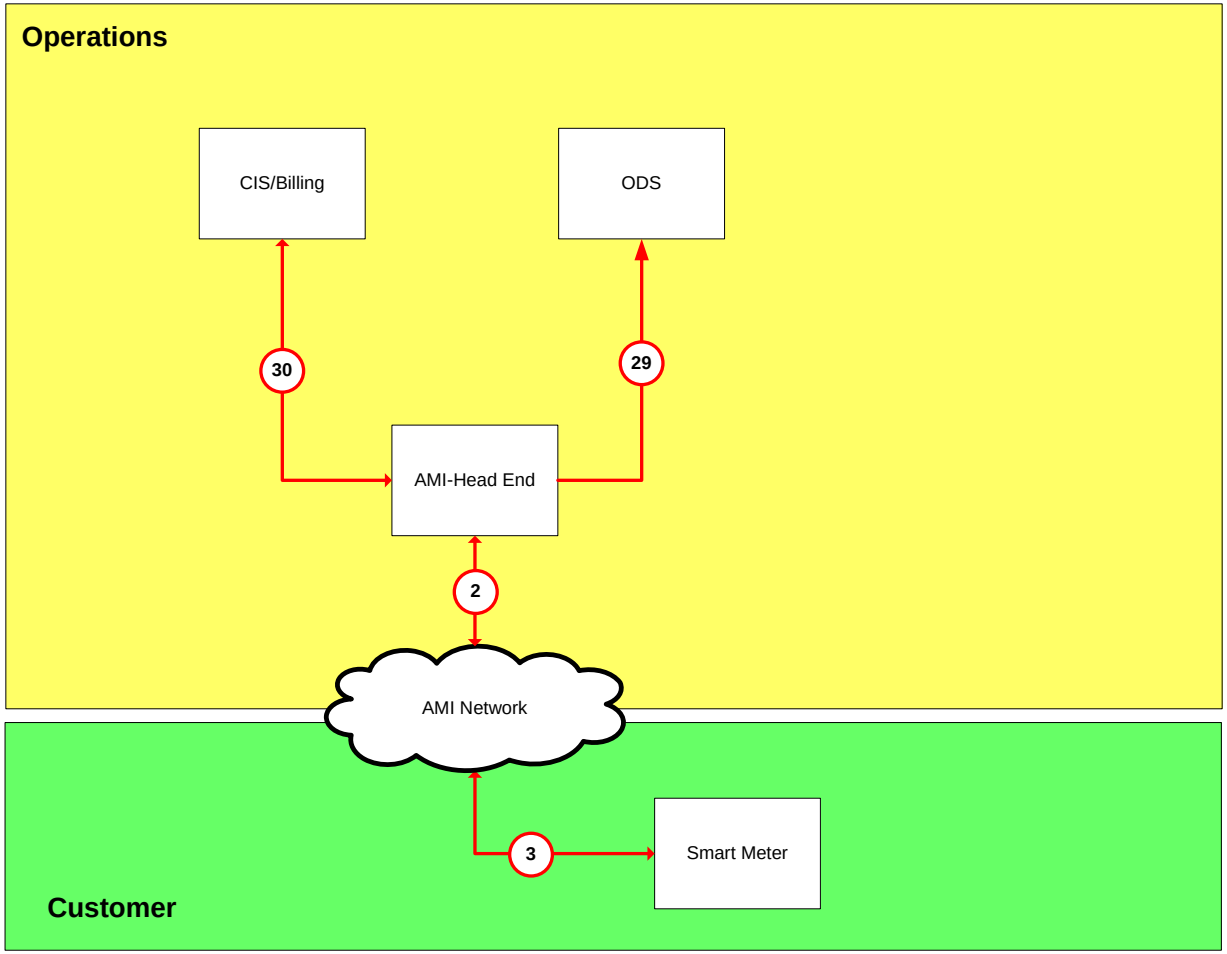


Figure 1-1
Context Diagram for Remote Connect/Disconnect from CIS

1.5 Actor (Stakeholder) Roles

Grouping (Community)		*Group Description*
Actor Name	*Actor Type (person, organization, device, system, or subsystem)*	*Actor Description*
CIS (MACCS)	System	Customer Information System internally called MACSS that is the system of record for customer data and billing.
AMI Head End	Device	
NIC ESP	Device	AMI side of the network interface card within the smart meter.
ODS	System	Operational Data Store is a sub-system of The Utility's data warehouse, which stores operational data i.e. all metering events and messages.
Meter Metrology Board	Device	The board, internal to the smart meter, on which the functions of the smart meter are configured and performed.
Internal Meter Disconnect Relay	Device	Internal relay that allows for the remote connect and disconnect of the meter
CSR	Person	Customer Service Representative
AMI Network	Use Case	Describes the communication paths from the AMI Head End to the NIC – ESP and the NIC – ESP to the AMI Head End

1.6 Information exchanged

Information Object Name	*Information Object Description*
Remote Meter Disconnect	Signal from the CIS that remotely disconnects the smart meter from the electrical service
Trip Signal	Trip signal that opens up the Internal Meter Disconnect Relay
Remote Meter Disconnect Verification	Signal that verifies the meter has been disconnected
Remote Meter Connect	Signal from the CIS that remotely connects the smart meter to the electrical service
Close Signal	Close signal that closes in the Internal Meter Disconnect Relay
Remote Meter Connect Verification	Signal that verifies the meter has been connected

1.7 Activities/Services

Describe or list the activities and services involved in this Function (in the context of this Function). An activity or service can be provided by a computer system, a set of applications, or manual procedures.

Activity/Service Name	*Activities/Services Provided*

1.8 Contracts/Regulations

Identify any overall (human-initiated) contracts, regulations, policies, financial considerations, engineering constraints, pollution constraints, and other environmental quality issues that affect the design and requirements of the Function.

Contract/Regulation	*Impact of Contract/Regulation on Function*

Policy	*From Actor*	*May*	*Shall Not*	*Shall*	*Description (verb)*	*To Actor*

Constraint	*Type*	*Description*	*Applies to*

2 Step by Step Analysis of Function

Describe steps that implement the function. If there is more than one set of steps that are relevant, make a copy of the following section grouping (Steps to implement function, Preconditions and Assumptions, Steps normal sequence, Post-conditions) and provide each copy with its own sequence name.

2.1 Steps to implement function – Name of Sequence

Remote Disconnect.

2.1.1 Preconditions and Assumptions

Actor/System/Information/Contract	*Preconditions or Assumptions*

2.1.2 Steps – Name of Sequence

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
#	*Triggering event? Identify the name of the event.*[1]	*What other actors are primarily responsible for the Process/Activity? Actors are defined in section0.*	*Label that would appear in a process diagram. Use action verbs when naming activity.*	*Describe the actions that take place in active and present tense. The step should be a descriptive noun/verb phrase that portrays an outline summary of the step. "If …Then…Else" scenarios can be captured as multiple Actions or as separate steps.*	*What other actors are primarily responsible for Producing the information? Actors are defined in section0.*	*What other actors are primarily responsible for Receiving the information? Actors are defined in section0.* *(Note – May leave blank if same as Primary Actor)*	*Name of the information object. Information objects are defined in section 1.6*	*Elaborate architectural issues using attached spreadsheet. Use this column to elaborate details that aren't captured in the spreadsheet.*	*Reference the applicable IECSA Environment containing this data exchange. Only one environment per step.*
1.1	A Remote Meter Disconnect is initiated by a CSR	CIS	CIS Request	CIS requests Remote Meter Disconnect from the AMI Head End	CIS	AMI Head End	Remote Meter Disconnect	61968?	
1.2		AMI Head End	Remote Meter Disconnect	AMI Head End sends Remote Meter Disconnect to AMI Network	AMI Head End	AMI Network	Remote Meter Disconnect	proprietary	Use AMI Network Use Case
1.3		AMI Network	Meter Data to NIC ESP	AMI Network sends Remote Meter Disconnect to NIC ESP	AMI Network	NIC ESP	Remote Meter Disconnect	proprietary	
1.4		NIC ESP	Meter Data to Meter Metrology Board	NIC ESP sends Remote Meter Disconnect to Meter Metrology Board	NIC ESP	Meter Metrology Board	Remote Meter Disconnect	C12.18, C12.19	

[1] Note – A triggering event is not necessary if the completion of the prior step – leads to the transition of the following step.

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
1.5		Meter Metrology Board	Trip Internal Meter Disconnect Relay	Meter Metrology Boards trips Internal Meter Disconnect Relay	Meter Metrology Board	Internal Meter Disconnect Relay	Trip Signal		
1.6		Meter Metrology Board	Remote Meter Disconnect Verification to NIC ESP	Meter Metrology Board sends Remote Meter Disconnect Verification to NIC ESP	Meter Metrology Board	NIC ESP	Remote Meter Disconnect Verification	C12.18, C12.19	
1.7		NIC ESP	Remote Meter Disconnect Verification to AMI Network	NIC ESP sends Remote Meter Disconnect Verification to AMI Network	NIC ESP	AMI Network	Remote Meter Disconnect Verification	proprietary	
1.8		AMI Network	Remote Meter Disconnect Verification to AMI Head End	AMI Network delivers Remote Meter Disconnect Verification to AMI Head End	AMI Network	AMI Head End	Remote Meter Disconnect Verification	proprietary	Use AMI Network Use Case
1.9		AMI Head End	Remote Meter Disconnect Verification to CIS	AMI Head End delivers Remote Meter Disconnect Verification to CIS	AMI Head End	CIS	Remote Meter Disconnect Verification	61968?	

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
1.10		AMI Head End	Remote Meter Disconnect Verification to ODS	AMI Head End delivers Remote Meter Disconnect Verification to ODS	AMI Head End	ODS	Remote Meter Disconnect Verification	61968?	

2.1.3 Post-conditions and Significant Results

Actor/Activity	*Post-conditions Description and Results*

3 Step by Step Analysis of Function

Describe steps that implement the function. If there is more than one set of steps that are relevant, make a copy of the following section grouping (Steps to implement function, Preconditions and Assumptions, Steps normal sequence, Post-conditions) and provide each copy with its own sequence name.

3.1 Steps to implement function – Name of Sequence

Remote Connect.

3.1.1 Preconditions and Assumptions

Actor/System/Information/Contract	*Preconditions or Assumptions*

Actor/System/Information/Contract	*Preconditions or Assumptions*

3.1.2 Steps – Name of Sequence

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
#	*Triggering event? Identify the name of the event.*[2]	*What other actors are primarily responsible for the Process/Activity? Actors are defined in section0.*	*Label that would appear in a process diagram. Use action verbs when naming activity.*	*Describe the actions that take place in active and present tense. The step should be a descriptive noun/verb phrase that portrays an outline summary of the step. "If …Then…Else" scenarios can be captured as multiple Actions or as separate steps.*	*What other actors are primarily responsible for Producing the information? Actors are defined in section0.*	*What other actors are primarily responsible for Receiving the information? Actors are defined in section0.* *(Note – May leave blank if same as Primary Actor)*	*Name of the information object. Information objects are defined in section 1.6*	*Elaborate architectural issues using attached spreadsheet. Use this column to elaborate details that aren't captured in the spreadsheet.*	*Reference the applicable IECSA Environment containing this data exchange. Only one environment per step.*
2.1	CSR initiates a Remote Meter Connect	CSR	Remote Meter Connect	CSR initiates a Remote Meter Connect	CSR	CIS	Remote Meter Connect		
2.2		CIS	CIS Request	CIS requests Remote Meter Connect from the AMI Head End	CIS	AMI Head End	Remote Meter Connect	61968?	
2.3		AMI Head End	Remote Meter Connect	AMI Head End sends Remote Meter Connect to AMI Network	AMI Head End	AMI Network	Remote Meter Connect	proprietary	Use AMI Network Use Case

[2] Note – A triggering event is not necessary if the completion of the prior step – leads to the transition of the following step.

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
2.4		AMI Network	Remote Meter Connect to NIC ESP	AMI Network sends Remote Meter Connect to NIC ESP	AMI Network	NIC ESP	Remote Meter Connect	proprietary	
2.5		NIC ESP	Remote Meter Connect to Meter Metrology Board	NIC ESP sends Remote Meter Connect to Meter Metrology Board	NIC ESP	Meter Metrology Board	Remote Meter Connect	C12.18, C12.19	
2.6		Meter Metrology Board	Close Internal Meter Disconnect Relay	Meter Metrology Boards closes Internal Meter Disconnect Relay	Meter Metrology Board	Internal Meter Disconnect Relay	Close Signal		
2.7		Meter Metrology Board	Remote Meter Connect Verification to NIC ESP	Meter Metrology Board sends Remote Meter Connect Verification to NIC ESP	Meter Metrology Board	NIC ESP	Remote Meter Connect Verification	C12.18, C12.19	
2.8		NIC ESP	Remote Meter Connect Verification to AMI Network	NIC ESP sends Remote Meter Connect Verification to AMI Network	NIC ESP	AMI Network	Remote Meter Connect Verification	proprietary	

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
2.9		AMI Network	Remote Meter Connect Verification to AMI Head End	AMI Network delivers Remote Meter Connect Verification to AMI Head End	AMI Network	AMI Head End	Remote Meter Connect Verification	proprietary	Use AMI Network Use Case
2.10		AMI Head End	Remote Meter Connect Verification to CIS	AMI Head End delivers Remote Meter Connect Verification to CIS	AMI Head End	CIS	Remote Meter Connect Verification	61968?	
2.11		AMI Head End	Remote Meter Connect Verification to ODS	AMI Head End delivers Remote Meter Connect Verification to ODS	AMI Head End	ODS	Remote Meter Connect Verification	61968?	

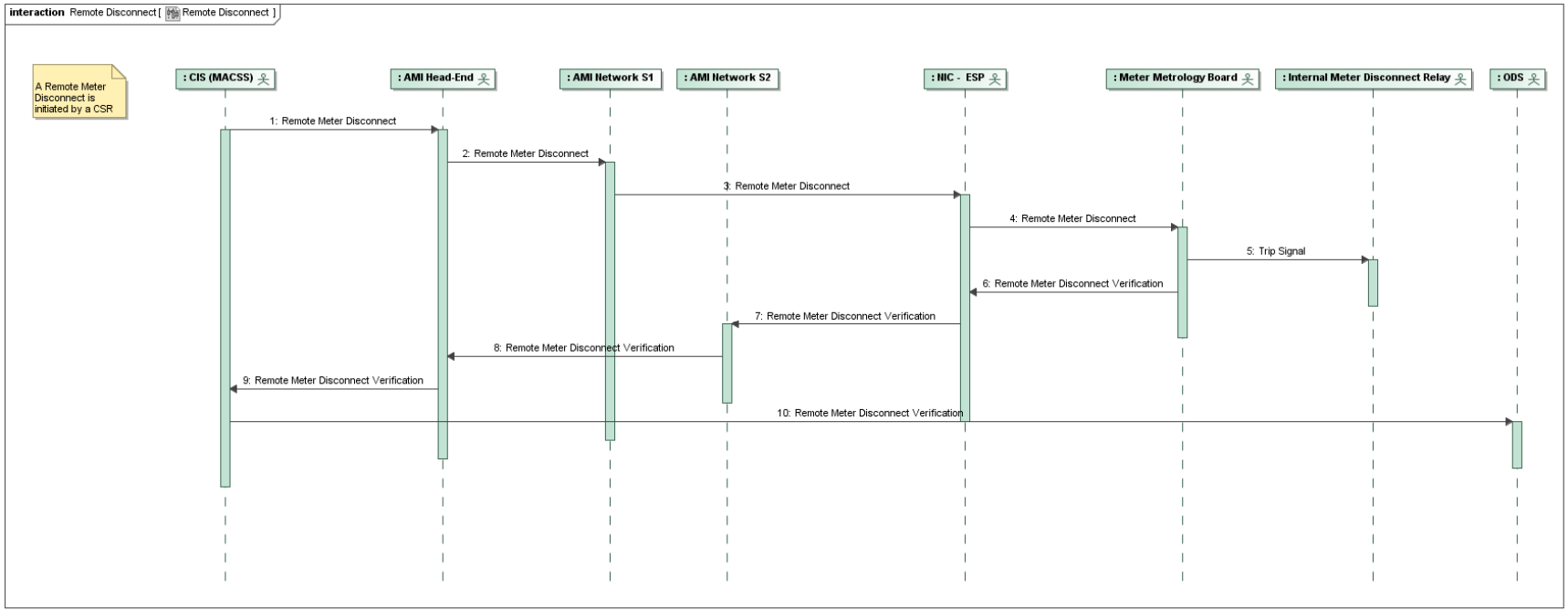
3.1.3 Post-conditions and Significant Results

Actor/Activity	*Post-conditions Description and Results*

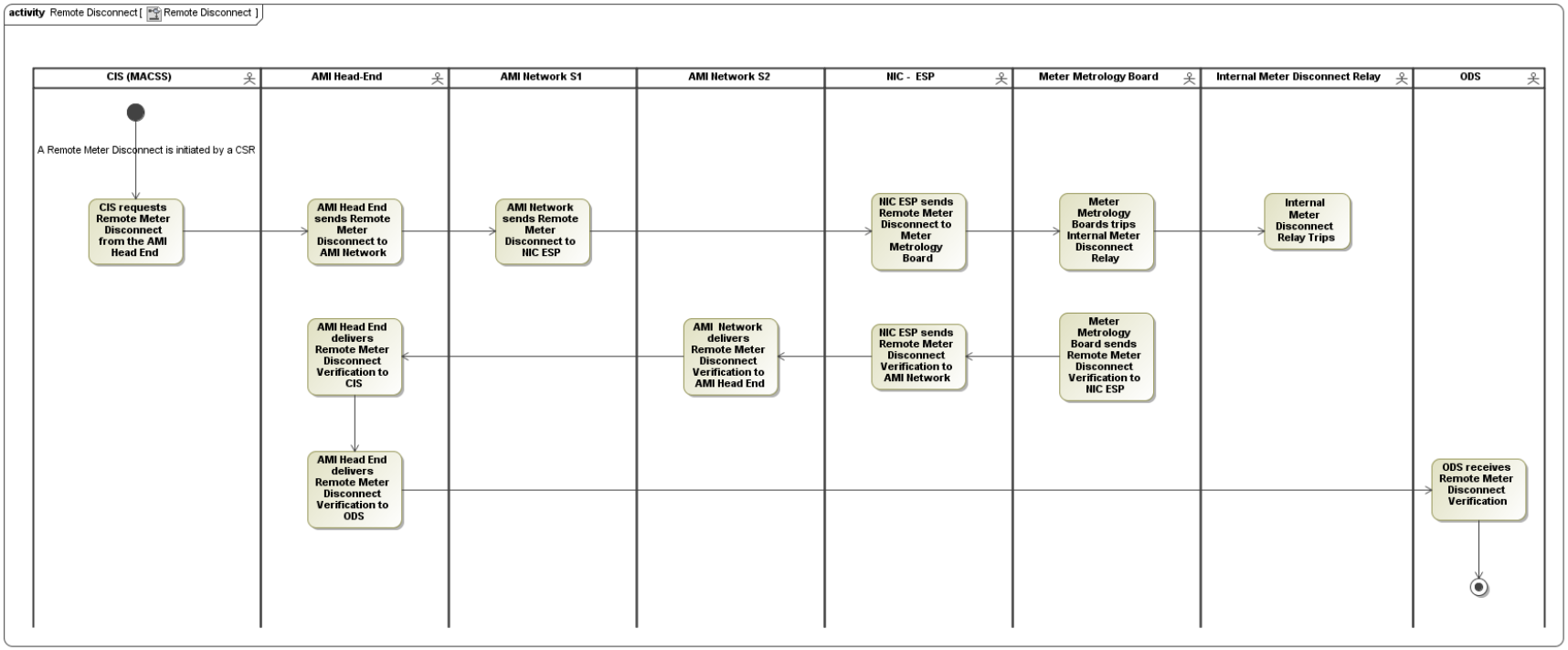
3.2 Architectural Issues in Interactions

Elaborate on all architectural issues in each of the steps outlined in each of the sequences above. Reference the Step by number.

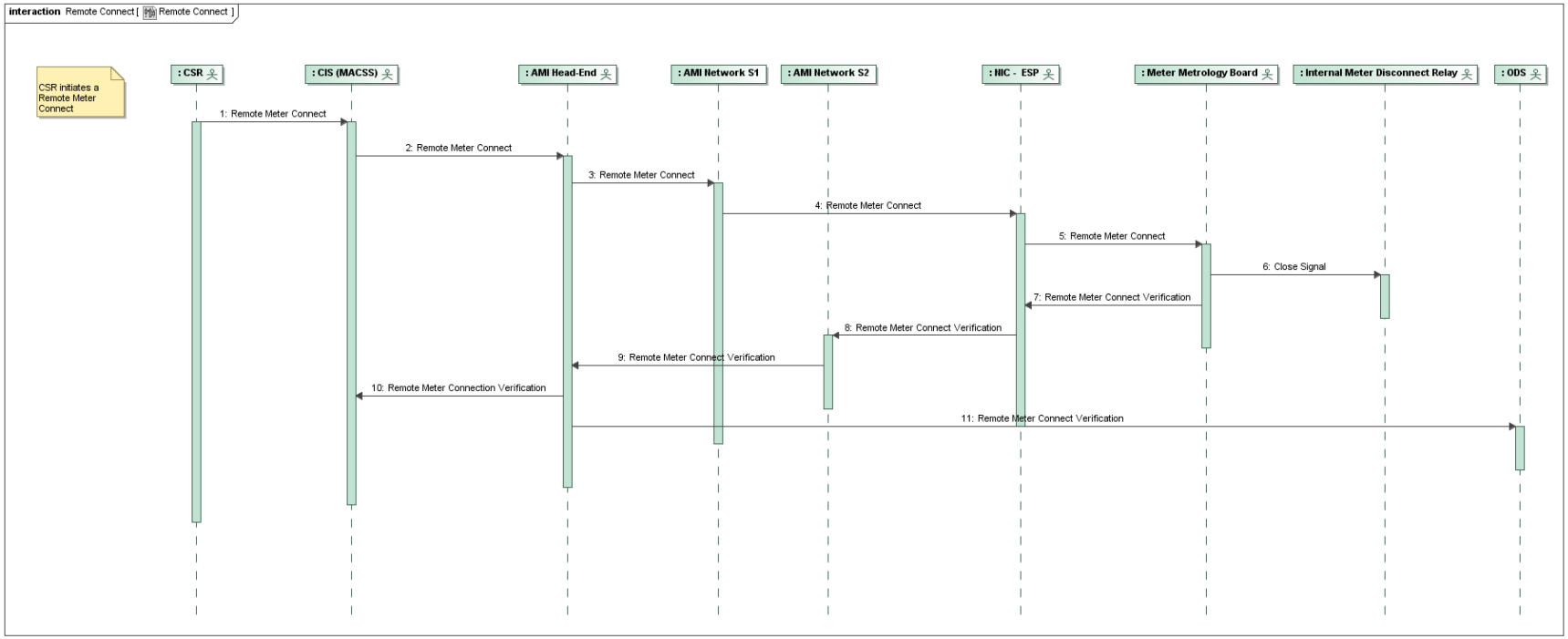
3.3 Diagrams



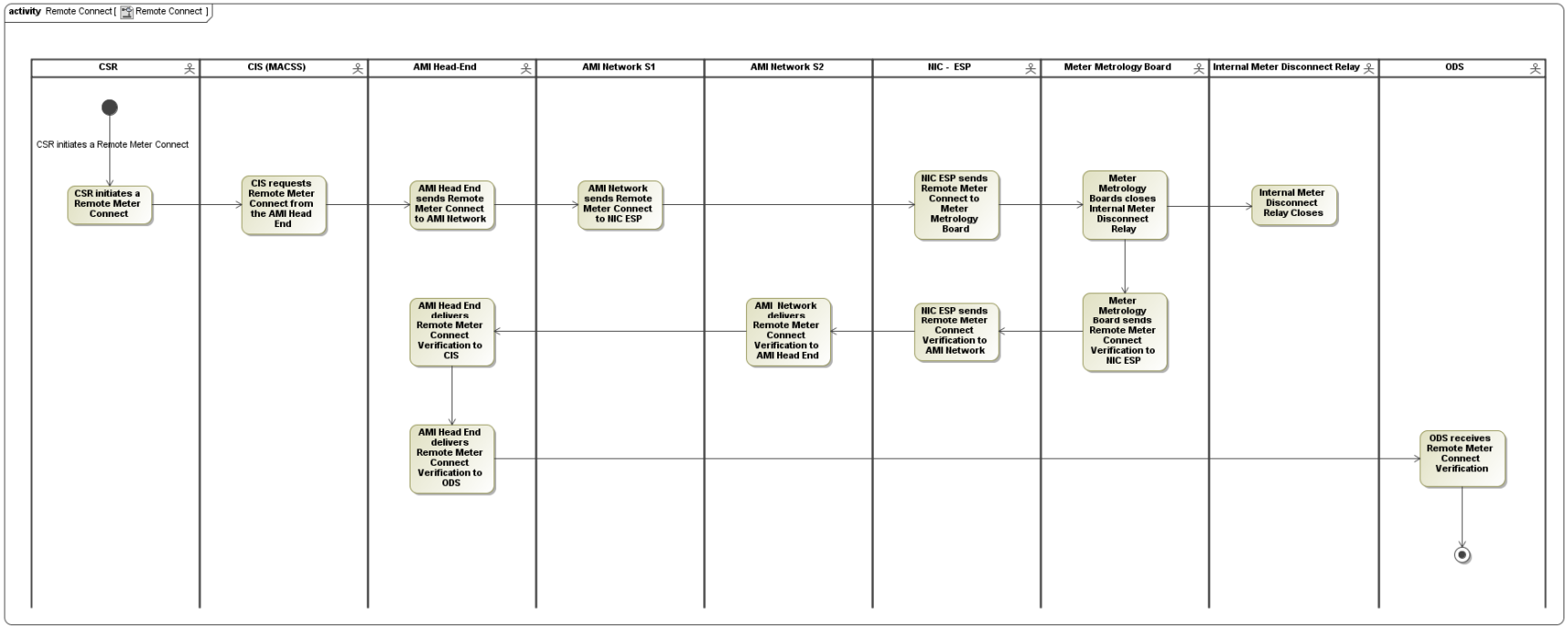
Remote Meter Disconnect Sequence Diagram



Remote Meter Disconnect Activity Diagram



Remote Meter Connect Sequence Diagram



Remote Meter Connect Activity Diagram

4 Auxiliary Issues

4.1 References and contacts

Documents and individuals or organizations used as background to the function described; other functions referenced by this function, or acting as "sub" functions; or other documentation that clarifies the requirements or activities described. All prior work (intellectual property of the company or individual) or proprietary (non-publicly available) work must be so noted.

ID	Title or contact	Reference or contact information
[1]		

4.2 Action Item List

As the function is developed, identify issues that still need clarification, resolution, or other notice taken of them.

ID	Description	Status
[1]		

4.3 Revision History

No	Date	Author	Description
1.1	4-6-2010	Brian D. Green	Original Use Case
1.2	4-7-2010	Brian D. Green	Clean-Up Step Sequences
2.0	4-10-2010	John J. Simmins	Added Description, Narrative and filled in Blanks. Still needs message description
2.1	4-14-2010	John J. Simmins	Minor corrections
3.0	5-10-2010	Brian D. Green	Add revisions and diagrams