



Municipal Securities Rulemaking Board

Short-term Obligation Rate
Transparency System

Subscriber Manual

Version 2.1
April 2011

Revision History

Version	Date	Major Changes
1.0	August 10, 2010	Initial version.
1.1	September 30, 2010	Clarified that access to a beta platform for testing is available for a maximum of 90 days.
2.0	February 2011	Reflects changes related to the additional ARS and VRDO information described in MSRB Notice 2011-11; includes updated: Data Tag Mapping, XML Message Schemas, Data Tag Reference, Data Element Definitions and Sample XML Messages Changes effective May 16, 2011
2.1	April 2011	Schema minimum value allowed for AggregateParAmountInvestorRAType changed from 0 to -999999999

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Other Resources

MSRB Public Web Site: www.msrb.org

Rule G-34(c): www.msrb.org/Rules-and-Interpretations/MSRB-Rules/General/Rule-G-34.aspx

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INTRODUCTION

In this document are specifications for the subscription to the information collected by the Municipal Securities Rulemaking Board (MSRB) Short-term Obligation Rate Transparency (“SHORT”) System. The SHORT subscription service became operational on September 30, 2010. The SHORT subscription service is provided through computer-to-computer data streams utilizing XML files for data. Information submitted to the SHORT System also is posted to the MSRB’s Electronic Municipal Market Access (EMMA) web portal pursuant to the EMMA short-term obligation rate transparency service.

BACKGROUND

The SHORT subscription service is designed to make all information collected by the SHORT System available to subscribers simultaneously with the posting of such information to the EMMA web portal. Subscribers to the SHORT subscription service are required to enter into a subscription agreement with the MSRB and are subject to the terms and conditions thereof. These subscription specifications provide a general background on the nature of submissions made to the SHORT System service that are disseminated through the SHORT subscription service.

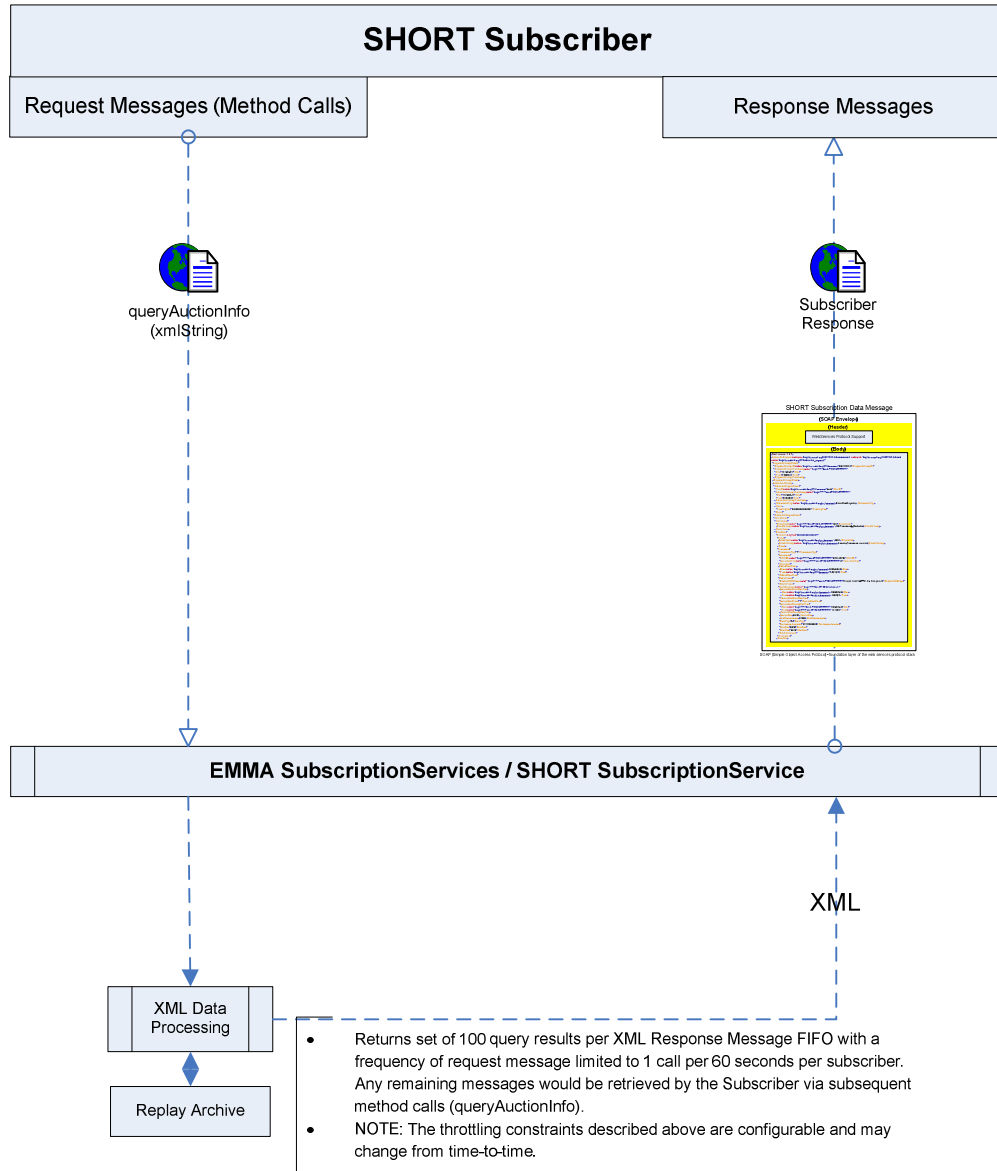
SPECIFICATIONS FOR THE SHORT SUBSCRIPTION SERVICE

The MSRB will expose a web service to allow subscribers to receive SOAP (Simple Object Access Protocol) standard XML (extensible markup language) messages using secure, computer-to-computer communications. This service will be remotely consumed by applications written by or for subscribers in a wide variety of programming languages and running on a wide variety of platforms.

MSRB will also expose a Beta version of SHORT subscription service. A beta version of the SHORT subscription service will serve as a platform for subscribers to conduct tests to ensure proper programming and configuration of their applications for receiving SHORT System information. ***Data available through the beta platform are for test purposes only and are not to be re-disseminated or otherwise used by subscribers, other than for purposes of testing programming and configuration of subscription applications.*** Access to the beta site will require a separate set-up. To inquire about the procedures for accessing the beta site, contact the Market Information Department at (703) 797-6668.

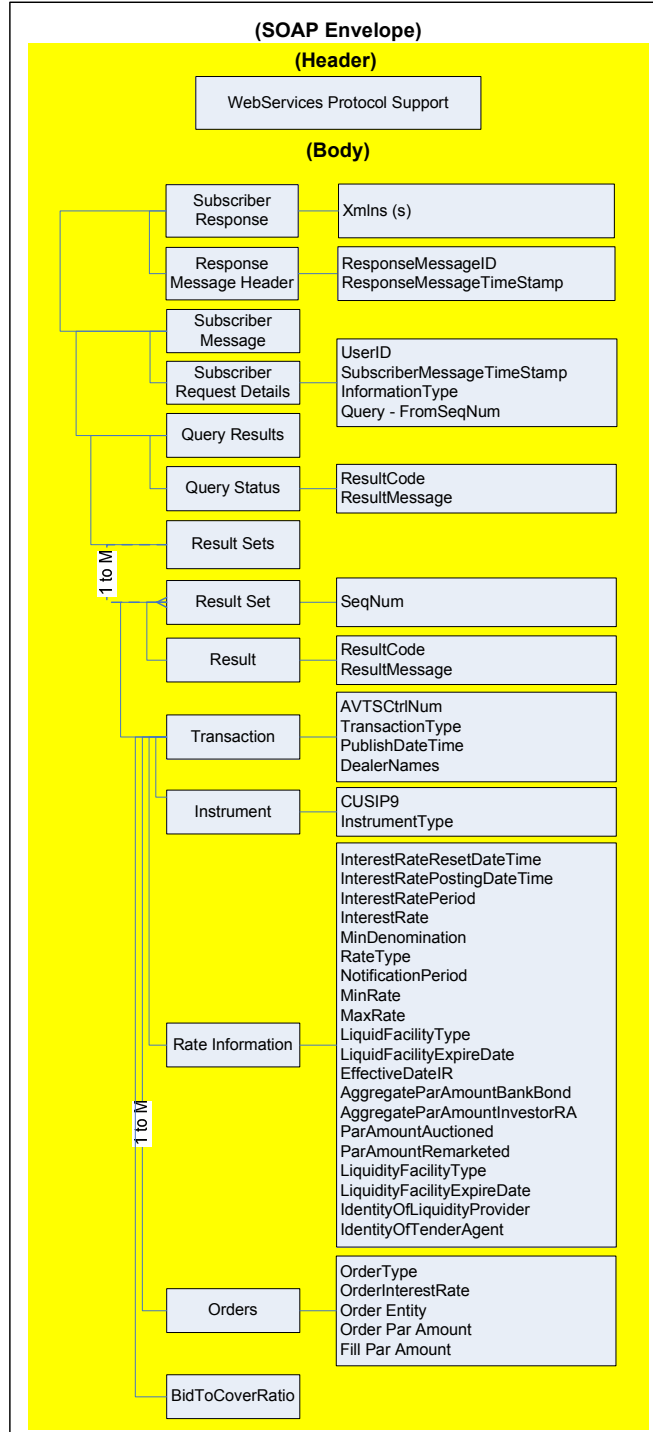
PLEASE NOTE: Access to such beta platform will be made available for a maximum of three months after which time the subscriber is required to go into production mode. Failure to do so will result in termination of access to the beta platform.

MESSAGE PROCESSING OVERVIEW



DATA TAG MAPPING

SHORT Subscription Data Message



SOAP (Simple Object Access Protocol) - foundation layer of the web services protocol stack

DATA MESSAGE & TYPE DEFINITION SCHEMAS

Set forth below is a schema (.xsd) associated with both subscription request and response data messages.

SHORT Subscriber Request Message Method Call (queryAuctionInfo)

(SOAP)

(Header)

xmlString

```
<?xml version="1.0" encoding="utf-8"?>
<SubscriberRequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://
www.msrb.org/avts/subscriber">
  <Subscriber>
    <UserID xmlns="http://www.msrb.org/avts/common"></UserID>
    <SubscriberMessageTimeStamp xmlns="http://www.msrb.org/
avts/common">
    <Date>2010-05-18</Date>
    <Time>04:32:49</Time>
    </SubscriberMessageTimeStamp>
    <InformationType xmlns="http://www.msrb.org/avts/
common">ResetRate/Liquidity</InformationType>
    <Password xmlns="http://www.msrb.org/avts/common"></
Password>
  </Subscriber>
  <Query>
    <FromSeqNum>0000000000000001</FromSeqNum>
  </Query>
</SubscriberRequest>
```

SHORT Subscription Response Data Message



SOAP (Simple Object Access Protocol) - foundation layer of the web services protocol stack

XML MESSAGE SCHEMAS

Detailed below are Subscriber Request, Subscriber Response, Common, and Submitter Input schemas.

SubscriberRequest.xsd

```
<?xml version="1.0"?>
<xsd:schema elementFormDefault="qualified"
  xmlns="http://www.msrb.org/avts/subscriber"
  xmlns:avts="http://www.msrb.org/avts/common"
  targetNamespace="http://www.msrb.org/avts/subscriber"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <xsd:import namespace="http://www.msrb.org/avts/common"
    schemaLocation="Common.xsd" />

  <xsd:element name="SubscriberRequest">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element name="Subscriber"
          type="MSRBSubscriber" />
        <xsd:element ref="Query" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>

  <xsd:complexType name="MSRBSubscriber">
    <xsd:complexContent>
      <xsd:extension base="avts:Subscriber">
        <xsd:sequence>
          <xsd:element ref="avts:Password" />
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
</xsd:schema>
```

```
</xsd:complexType>
<xsd:element name="Query">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="FromSeqNum" type="avts:FromSeqNum"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
</xsd:schema>
```

SubscriberResponse.xsd

```
<xsd:schema xmlns="http://www.msrb.org/avts/subscriber_response"
  xmlns:avts="http://www.msrb.org/avts/common"
  xmlns:submitter="http://www.msrb.org/avts/submitter"
  elementFormDefault="qualified"
  targetNamespace="http://www.msrb.org/avts/subscriber_response"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <xsd:import namespace="http://www.msrb.org/avts/common"
    schemaLocation="Common.xsd" />

  <xsd:import namespace="http://www.msrb.org/avts/submitter"
    schemaLocation="SubmitterInput.xsd" />

  <xsd:complexType name="SubscriberRequestDetails">
    <xsd:complexContent>
      <xsd:extension base="avts:Subscriber">
        <xsd:sequence>
          <xsd:element ref="Query" />
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>

  <xsd:element name="SubscriberMessage">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element name="SubscriberRequestDetails"
          type="SubscriberRequestDetails" />
        <xsd:element ref="QueryResults" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
```

```
<xsd:element name="QueryResults">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="QueryStatus" type="avts:Result" />
      <xsd:element ref="ResultSets" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:element name="ResultSets">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element minOccurs="0" maxOccurs="unbounded"
        name="ResultSet" type="ResultSet" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:complexType name="ResultSet">
  <xsd:sequence>
    <xsd:element name="Result" type="avts:Result" />
    <xsd:element name="Transaction"
      type="PublishedTransaction" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="SeqNum" type="avts:FromSeqNum"
    use="required" />
</xsd:complexType>

<xsd:element name="DealerNames">
  <!-- If there are no transactions, DealerNames could be empty -->
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element minOccurs="0" maxOccurs="unbounded"
        ref="avts:DealerMSRBName" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
```

```
<xsd:complexType name="PublishedTransaction">
  <xsd:sequence>
    <xsd:element name="TransactionType"
      type="avts:TransactionType" />
    <xsd:element name="Instrument" type="avts:Instrument" />
    <xsd:element name="PublishDateTime" type="avts:BasicDateTime" />
    <xsd:element ref="DealerNames" />
    <xsd:element ref="submitter:RateInformation" />
    <xsd:element ref="submitter:Orders" minOccurs="0" maxOccurs="1" />
    <xsd:element name="BidToCoverRatio" type="xsd:decimal" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="AVTSCtrlNum" type="avts:AVTSCtrlNum"
    use="required" />
</xsd:complexType>

<xsd:element name="Query">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="FromSeqNum" type="avts:FromSeqNum" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:element name="SubscriberResponse">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="ResponseMessageHeader"
        type="avts:ResponseMessageHeader" />
      <xsd:element ref="SubscriberMessage" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

</xsd:schema>
```

Common.xsd

```
<xsd:schema elementFormDefault="qualified"
  targetNamespace="http://www.msrb.org/avts/common"
  xmlns="http://www.msrb.org/avts/common"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:jaxb="http://java.sun.com/xml/ns/jaxb"
  xmlns:xjc="http://java.sun.com/xml/ns/jaxb/xjc"
  jaxb:extensionBindingPrefixes="xjc" jaxb:version="1.0">

  <xsd:annotation>
    <xsd:appinfo>
      <jaxb:globalBindings>
        <xjc:serializable />
      </jaxb:globalBindings>
    </xsd:appinfo>
  </xsd:annotation>

  <xsd:element name="DealerMSRBNum">
    <xsd:simpleType>
      <xsd:restriction base="xsd:string">
        <xsd:pattern value="[a-zA-Z0-9]*" />
        <xsd:minLength value="5" />
        <xsd:maxLength value="15" />
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>

  <xsd:element name="DealerMSRBName">
    <xsd:simpleType>
      <xsd:restriction base="xsd:string">
        <xsd:pattern value="[a-zA-Z0-9,.,:]*" />
        <xsd:minLength value="5" />
        <xsd:maxLength value="90" />
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>
</xsd:schema>
```



```
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:element>

    <xsd:complexType name="AVTSUser">
      <xsd:sequence>
        <xsd:element name="UserID" type="UserID" />
        <xsd:element ref="Password" />
      </xsd:sequence>
    </xsd:complexType>

    <xsd:simpleType name="UserID">
      <xsd:restriction base="xsd:string">
        <xsd:minLength value="3" />
        <xsd:maxLength value="15" />
      </xsd:restriction>
    </xsd:simpleType>

    <xsd:simpleType name="Period">
      <xsd:restriction base="xsd:integer">
        <xsd:minInclusive value="0" />
        <xsd:maxInclusive value="999" />
      </xsd:restriction>
    </xsd:simpleType>

    <xsd:simpleType name="Rate">
      <xsd:restriction base="xsd:decimal">
        <xsd:pattern value="[0-9]{1,2}\.[0-9]{1,3}" />
      </xsd:restriction>
    </xsd:simpleType>

    <xsd:element name="Password">
      <xsd:simpleType>
        <xsd:restriction base="xsd:string">
          <xsd:minLength value="8" />
          <xsd:maxLength value="50" />
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```
        </xsd:simpleType>
</xsd:element>

<xsd:simpleType name="SubmissionCtrlNum">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="[a-zA-Z0-9]{16}" />
    <xsd:minLength value="16" />
    <xsd:maxLength value="16" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="AVTSCtrlNum">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="[a-zA-Z0-9]{16}" />
    <xsd:minLength value="16" />
    <xsd:maxLength value="16" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="InformationType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="ResetRate/Liquidity" />
    <xsd:enumeration value="Bidding" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="InstrumentType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="A" />
    <xsd:enumeration value="V" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:element name="CUSIP9">
  <xsd:simpleType>
    <xsd:restriction base="xsd:string">
      <xsd:pattern value="[a-zA-Z0-9]{9}" />
    </xsd:restriction>
  </xsd:simpleType>
</xsd:element>
```

```
                <xsd:minLength value="9" />
                <xsd:maxLength value="9" />
            </xsd:restriction>
        </xsd:simpleType>
    </xsd:element>

    <xsd:complexType name="Instrument">
        <xsd:sequence>
            <xsd:element ref="CUSIP9" />
            <xsd:element name="InstrumentType" type="InstrumentType" />
        </xsd:sequence>
    </xsd:complexType>

    <xsd:simpleType name="BasicTime">
        <xsd:restriction base="xsd:string">
            <xsd:pattern
                value="(0[0-9]|[1-5][0-9]):(0[0-9]|[1-5][0-9]):(0[0-9]|[1-5][0-9])" />
        </xsd:restriction>
    </xsd:simpleType>

    <xsd:simpleType name="BasicDate">
        <xsd:restriction base="xsd:string">
            <xsd:pattern
                value="(19|20)\d\d-(0[1-9]|1[012])-(0[1-9]|[12][0-9]|3[01])" />
        </xsd:restriction>
    </xsd:simpleType>

    <xsd:complexType name="BasicDateTime">
        <xsd:sequence>
            <xsd:annotation>
                <xsd:documentation>
                    All Dates will be in EST. Date and Time fields have
                    been broken up into components so that Timezone is
                    not used.
                </xsd:documentation>
            </xsd:annotation>
            <xsd:element name="Date" type="BasicDate" />
        </xsd:sequence>
    </xsd:complexType>
```

```
        <xsd:element name="Time" type="BasicTime" />
      </xsd:sequence>
    </xsd:complexType>

    <xsd:complexType name="InterestRateResetDateTime">
      <xsd:complexContent>
        <xsd:extension base="BasicDateTime" />
      </xsd:complexContent>
    </xsd:complexType>

    <xsd:complexType name="MessageTimeStamp">
      <xsd:complexContent>
        <xsd:extension base="BasicDateTime" />
      </xsd:complexContent>
    </xsd:complexType>

    <xsd:simpleType name="TransactionType">
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="I" />
        <xsd:enumeration value="M" />
        <xsd:enumeration value="C" />
      </xsd:restriction>
    </xsd:simpleType>

    <xsd:complexType name="Submitter">
      <xsd:sequence>
        <xsd:element name="UserID" type="UserID" />
        <xsd:element name="SubmitterMessageTimeStamp"
          type="MessageTimeStamp" />
        <xsd:element name="SubmissionCtrlNum"
          type="SubmissionCtrlNum" />
        <xsd:element name="InformationType" type="InformationType" />
      </xsd:sequence>
    </xsd:complexType>

    <xsd:simpleType name="FromSeqNum">
      <xsd:restriction base="xsd:string">
```

```
        <xsd:pattern value="[0-9]{16}" />
        <xsd:minLength value="16" />
        <xsd:maxLength value="16" />
    </xsd:restriction>
</xsd:simpleType>

<xsd:complexType name="Subscriber">
    <xsd:sequence>
        <xsd:element name="UserID" type="UserID" />
        <xsd:element name="SubscriberMessageTimeStamp"
            type="MessageTimeStamp" />
        <xsd:element name="InformationType" type="InformationType" />
    </xsd:sequence>
</xsd:complexType>

<xsd:complexType name="Results">
    <xsd:sequence>
        <xsd:element minOccurs="1" maxOccurs="unbounded"
            name="Result" type="Result" />
    </xsd:sequence>
</xsd:complexType>

<xsd:complexType name="Result">
    <xsd:sequence>
        <xsd:element name="ResultCode">
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:pattern value="[0-9,A-Z]{4}" />
                    <xsd:minLength value="4" />
                    <xsd:maxLength value="4" />
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:element>
        <xsd:element name="ResultMessage" type="xsd:string" />
    </xsd:sequence>
</xsd:complexType>
```

```
<xsd:simpleType name="MessageID">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="[0-9]{10}" />
    <xsd:minLength value="10" />
    <xsd:maxLength value="10" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:complexType name="ResponseMessageHeader">
  <xsd:sequence>
    <xsd:element name="ResponseMessageID" type="MessageID" />
    <xsd:element name="ResponseMessageTimeStamp"
      type="BasicDateTime" />
  </xsd:sequence>
</xsd:complexType>

<xsd:simpleType name="RateType">
  <xsd:annotation>
    <xsd:documentation>
      ARS M – Max Rate H – All Hold Rate A – Set by Auction
      VRDO M – Max Rate F – Set by Formula R – Set by Agent
    </xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="M" />
    <xsd:enumeration value="H" />
    <xsd:enumeration value="A" />
    <xsd:enumeration value="F" />
    <xsd:enumeration value="R" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="LiquidityFacilityType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="P" />
    <xsd:enumeration value="L" />
    <xsd:enumeration value="S" />
  </xsd:restriction>
</xsd:simpleType>
```

```
        </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="AggregateParAmountBankBondType">
  <xsd:restriction base="xsd:decimal">
    <xsd:pattern value="[0-9]*" />
    <xsd:minInclusive value="0"/>
    <xsd:totalDigits value="10" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="AggregateParAmountInvestorRAType">
  <xsd:restriction base="xsd:decimal">
    <xsd:minInclusive value="-.999999999"/>
    <xsd:totalDigits value="10" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="IdentityOfLiquidityProviderType">
  <xsd:restriction base="xsd:string">
    <xsd:minLength value="1" />
    <xsd:maxLength value="90" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="IdentityOfTenderAgentType">
  <xsd:restriction base="xsd:string">
    <xsd:minLength value="1" />
    <xsd:maxLength value="90" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="OrderType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="B" />
    <xsd:enumeration value="O" />
    <xsd:enumeration value="S" />
  </xsd:restriction>
</xsd:simpleType>
```

```
        </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="OrderEntity">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="I" />
    <xsd:enumeration value="P" />
    <xsd:enumeration value="C" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="OrderParAmountType">
  <xsd:restriction base="xsd:decimal">
    <xsd:pattern value="[0-9]*" />
    <xsd:minInclusive value="0"/>
    <xsd:totalDigits value="10" />
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="FilledParAmountType">
  <xsd:restriction base="xsd:decimal">
    <xsd:pattern value="[0-9]*" />
    <xsd:minInclusive value="0"/>
    <xsd:totalDigits value="10" />
  </xsd:restriction>
</xsd:simpleType>

</xsd:schema>
```


SubmitterInput.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<xsd:schema elementFormDefault="qualified"
  xmlns:avts="http://www.msrb.org/avts/common"
  xmlns="http://www.msrb.org/avts/submitter"
  targetNamespace="http://www.msrb.org/avts/submitter"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <xsd:import namespace="http://www.msrb.org/avts/common"
    schemaLocation="Common.xsd" />

  <xsd:element name="SubmitterInput">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element name="Submitter" type="MSRBSubmitter" />
        <xsd:element name="Transactions" type="Transactions" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>

  <xsd:complexType name="MSRBSubmitter">
    <xsd:complexContent>
      <xsd:extension base="avts:Submitter">
        <xsd:sequence>
          <xsd:element ref="avts:Password" />
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>

  <xsd:element name="Dealers">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element minOccurs="1" maxOccurs="unbounded" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
</xsd:schema>
```

```
                ref="avts:DealerMSRBNum" />
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>

    <xsd:element name="InterestRate" type="avts:Rate" />

    <xsd:simpleType name="RateTypeNC">
        <xsd:union>
            <xsd:simpleType>
                <xsd:restriction base="avts:Rate" />
            </xsd:simpleType>
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:enumeration value="NC" />
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:union>
    </xsd:simpleType>

    <xsd:simpleType name="MinDenomination">
        <xsd:restriction base="xsd:decimal">
            <xsd:minInclusive value="0"/>
            <xsd:totalDigits value="9" />
        </xsd:restriction>
    </xsd:simpleType>

    <xsd:simpleType name="InterestRatePeriod">
        <xsd:restriction base="avts:Period" />
    </xsd:simpleType>

    <xsd:simpleType name="NotificationPeriod">
        <xsd:restriction base="avts:Period" />
    </xsd:simpleType>

    <xsd:complexType name="InterestRatePostingDateTime">
        <xsd:complexContent>
```

```
        <xsd:extension base="avts:BasicDateTime" />
    </xsd:complexContent>
</xsd:complexType>

<xsd:simpleType name="ParAmountAuctioned">
    <xsd:restriction base="xsd:decimal">
        <xsd:minInclusive value="0" />
        <xsd:totalDigits value="10" />
    </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="ParAmountRemarketed">
    <xsd:restriction base="xsd:decimal">
        <xsd:minInclusive value="0" />
        <xsd:totalDigits value="10" />
    </xsd:restriction>
</xsd:simpleType>

<xsd:complexType name="Transactions">
    <xsd:sequence>
        <xsd:element minOccurs="1" maxOccurs="unbounded"
            name="Transaction" type="Transaction" />
    </xsd:sequence>
</xsd:complexType>

<xsd:complexType name="Transaction">
    <xsd:sequence>
        <xsd:element name="TransactionType"
            type="avts:TransactionType" />
        <xsd:element name="Instrument" type="avts:Instrument" />
        <xsd:element ref="Dealers" />
        <xsd:element ref="RateInformation" />
        <xsd:element ref="Orders" minOccurs="0" maxOccurs="1" />
    </xsd:sequence>
</xsd:complexType>

<xsd:element name="LiquidityFacilityExpireDate"
```

```
        type="avts:BasicDate" />
<xsd:element name="TenderAgent">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="IdentityOfTenderAgent"
        type="avts:IdentityOfTenderAgentType" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:element name="Order">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="OrderType" type="avts:OrderType" minOccurs="0" maxOccurs="1" />
      <xsd:element name="OrderInterestRate" type="avts:Rate" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="OrderEntity" type="avts:OrderEntity" />
      <xsd:element name="OrderParAmount" type="avts:OrderParAmountType" />
      <xsd:element name="FilledParAmount" type="avts:FilledParAmountType" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:element name="LiquidityFacility">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="LiquidityFacilityType"
        type="avts:LiquidityFacilityType" />
      <xsd:element ref="LiquidityFacilityExpireDate" />
      <xsd:element name="IdentityOfLiquidityProvider" type="avts:IdentityOfLiquidityProviderType" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
<xsd:element name="LiquidityFacilities">
  <xsd:complexType>
    <xsd:sequence>
```

```
                <xsd:element minOccurs="0" maxOccurs="unbounded"
                    ref="LiquidityFacility" />
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>

    <xsd:element name="Orders">
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element minOccurs="0" maxOccurs="unbounded"
                    ref="Order" />
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>

    <xsd:element name="TenderAgents">
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element minOccurs="1" maxOccurs="unbounded"
                    ref="TenderAgent" />
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>

    <xsd:element name="RateInformation">
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element name="InterestRateResetDateTime"
                    type="avts:InterestRateResetDateTime" />
                <xsd:element name="InterestRatePeriod"
                    type="InterestRatePeriod" />
                <xsd:choice>
                    <xsd:element name="NotificationPeriod" type="NotificationPeriod" />
                    <xsd:element name="InterestRatePostingDateTime"
                        type="InterestRatePostingDateTime" />
                </xsd:choice>
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>
    <xsd:element ref="InterestRate" />
```

```
<xsd:element name="EffectiveDateIR" type="avts:BasicDate" minOccurs="0" maxOccurs="1"/>
<xsd:element name="AggregateParAmountBankBond" type="avts:AggregateParAmountBankBondType" minOccurs="0"
maxOccurs="1"/>
  <xsd:element name="AggregateParAmountInvestorRA" type="avts:AggregateParAmountInvestorRAType" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="MinDenomination" type="MinDenomination"/>
    <xsd:element name="RateType" type="avts:RateType" />
    <xsd:element minOccurs="0" maxOccurs="1"
      name="ParAmountAuctioned" type="ParAmountAuctioned"/>
    <xsd:element minOccurs="0" maxOccurs="1"
      name="ParAmountRemarketed" type="ParAmountRemarketed"/>
    <xsd:element minOccurs="0" maxOccurs="1" name="MinRate"
      type="RateTypeNC" />
    <xsd:element minOccurs="0" maxOccurs="1" name="MaxRate"
      type="RateTypeNC" />
    <xsd:element minOccurs="0" maxOccurs="1"
      ref="LiquidityFacilities" />
    <xsd:element minOccurs="0" maxOccurs="1" ref="TenderAgents" />
  </xsd:sequence>
</xsd:complexType>
</xsd:element>
</xsd:schema>
```

DATA TAG REFERENCE

This Section sets forth the data elements that will be used in connection with the XML interface for the SHORT System. The data elements are listed in tables that have the following columns. The order of the data elements in these tables does not necessarily represent the order of the fields in the XML-formatted file.

XML Container	Data Tag	Definition	Data Specification
Response Message Header	Response Message ID	Unique identifier assigned by SHORT at the time of message generation	String{Min10,Max10} ex : 0001909931
	Response Message Time Stamp	All Dates will be in Eastern Time (ET). Date and Time fields have been broken up into components so that Timezone is not used.	Date – yyyy-mm-dd ex: 2010-04-27 Time – hh24:mi:ss ex: 15:00:00
Subscriber Request Details	User ID	Unique identifier assigned by MSRB	String{Min3,Max15}
	Subscriber Message Time Stamp	All Dates will be in Eastern Time (ET). Date and Time fields have been broken up into components so that Timezone is not used.	Date – yyyy-mm-dd ex: 2010-04-27 Time – hh24:mi:ss ex: 15:00:00
	Information Type	Generally a response will relate to reset rate / liquidity information, but may eventually include bidding information.	Enumerated Value: • ResetRate/Liquidity • Bidding
	Query – From Seq Num	The beginning sequence number submitted by the subscriber to initiate a query response message.	String{Min16,Max16} Ex : 0000000000000001
Query Status	Result Code	A status code of the query in response to a subscriber request.	String{Min4,Max4} Ex : S001
	Result Message	A status message of the query in response to a subscriber request. Used to indicate request or system status (i.e., request processed successfully or an exception is being reported such as system busy).	String ex: 100 Transaction(s) Included
Result Set	Seq Num	An incremental system generated sequence number assigned to each reported transaction included in the response message beginning with the FromSeqNum sequentially indexing to the final transaction.	String{Min16,Max16} Ex : 000000000001100
Result	Result Code	A transaction status code in response to a subscriber request.	String{Min4,Max4} Ex : S001
	Result Message	A status message of the transaction in response to a subscriber request. Used to indicate transaction level status (i.e., request processed successfully).	String ex: Success: Transaction retrieved

XML Container	Data Tag	Definition	Data Specification
Transaction	Transaction Type	Dealer supplied transaction type indications that may from time-to-time include modification or cancellation notifications.	Enumerated Value: <ul style="list-style-type: none"> • I - Instrument • M – Modify • C - Cancel
	Publish Date Time	All Dates will be in Eastern Time (ET). Date and Time fields have been broken up into components so that Timezone is not used.	Date – <i>yyyy-mm-dd</i> ex: 2009-02-04 Time – <i>hh24:mi:ss</i> ex: 14:00:00
	Dealer Names	The identity of the ARS Program Dealer(s) or VRDO Remarketing Agent.	String{Min5,Max90} ex : Dealer MSRB Name
	AVTSCtrlNum	Unique identifier uses to tie transactions together in the case of modify or cancel.	String{Min16,Max16} ex : 9A842DA63EEF56EF
Instrument	CUSIP9	CUSIP Number for the ARS or VRDO	String{Min9,Max9} ex : 123456AB1
	Instrument Type	Indication of whether the security is an ARS or VRDO.	Enumerated Value: <ul style="list-style-type: none"> • A - ARS • V - VRDO
Rate Information	Interest Rate Reset Date Time	ARS - Date time that the ARS auction occurred. All times are Eastern Time (ET) and in military format. VRDO - Date time that the VRDO interest rate reset was determined. All times are Eastern Time (ET) and in military format.	Date – <i>yyyy-mm-dd</i> ex: 2009-02-04 Time – <i>hh24:mi:ss</i> ex: 14:00:00
	Interest Rate Period	Number of calendar days that the interest rate produced is applicable.	Integer{Min0,Max999} ex:10
	Interest Rate Posting Date Time	ARS (only) - Date Time that the ARS auction results were communicated to ARS Program Dealers. All times are Eastern Time and in military format.	Date – <i>yyyy-mm-dd</i> ex: 2009-02-04 Time – <i>hh24:mi:ss</i> ex: 14:00:00
	Effective Date of Interest Rate	VRDO (only) – Effective date that the interest rate reset is applicable	Date – <i>yyyy-mm-dd</i> ex: 2009-02-04
	Interest Rate	Interest rate, in percent.	Fixed Decimal (in percent) – <i>nn.nnn</i>
	Min Denomination	Minimum allowable transaction size, in par amount.	Numeric{Min0,Max9} ex: 25000

XML Container	Data Tag	Definition	Data Specification
Rate Information	Rate Type	ARS - Indication of whether the interest rate submitted represents a maximum rate (M), all hold rate (H), or an interest rate set by the auction process (A) VRDO - Indication of whether the interest rate submitted represents a maximum rate (M), a rate that was set by a formula (F), or a rate that was set by the VRDO Remarketing Agent (R)	Enumerated Value: ARS: <ul style="list-style-type: none"> • M – Max Rate • H – All Hold Rate • A – Set by Auction VRDO: <ul style="list-style-type: none"> • M – Max Rate • F – Set by Formula • R – Set by Agent
	Par Amount Auctioned	ARS (only) - Par amount auctioned not including hold orders effective at any interest rate. The par amount auctioned is commonly referred to in results of an auction communicated to Program Dealers by Auction Agents as the “accepted sells” or the “executed sells.” (This date element retired as of May 16, 2011.)	Decimal{Min0,Max10} ex: 100000000.000
	Min Rate	ARS - Minimum interest rate, in percent, applicable at the time of the auction or if such minimum interest rate is not able to be calculated, an indication that such rate is not calculable (NC). VRDO - Minimum interest rate, in percent, applicable at the time of the interest rate or if such minimum interest rate is not able to be calculated, an indication that such rate is not calculable (NC).	Fixed Decimal (in percent) – nn.nnn (or “NC” if not calculable)
	Max Rate	ARS - Maximum interest rate, in percent, applicable at the time of the auction or if such maximum interest rate is not able to be calculated, an indication that such rate is not calculable (NC). VRDO - Maximum interest rate, in percent, applicable at the time of the interest rate reset or if such maximum interest rate is not able to be calculated, an indication that such rate is not calculable (NC).	Fixed Decimal (in percent) – nn.nnn (or “NC” if not calculable)
	Par Amount Remarketed	VRDO (only) - Par amount of the VRDO held by a party other than the VRDO Remarketing Agent. (This date element retired as of May 16, 2011.)	Decimal{Min0,Max10} ex: 100000000.000
	Notification Period	VRDO (only) - Number of calendar days that may lapse between a holder of a VRDO tendering its security and a liquidity provider purchasing the tendered security in the event that the Remarketing Agent is unable to remarket the tendered security.	Integer{Min0,Max999} ex:10
	Liquidity Facility Type	VRDO (only) - For each liquidity facility applicable to the VRDO, an indication of whether each is a standby bond purchase agreement (P) or letter or credit (L).	Enumerated Value: <ul style="list-style-type: none"> • P – Standby Bond Purchase Agreement • L – Letter of Credit • S – Self Liquidity
	Liquidity Facility Expire Date	VRDO (only) - The expiration date of each liquidity facility applicable to the VRDO.	Date – yyyy-mm-dd ex: 2009-02-04

XML Container	Data Tag	Definition	Data Specification
Rate Information	Identify of Liquidity Provider	VRDOs (only) - For each liquidity facility applicable to the VRDO, the identity of the liquidity provider. This value reflects information available to the VRDO Remarketing Agent as of the date and time of the interest rate reset.	String{Min1,Max90}
	Aggregate Par Amount – Bank Bond	VRDOs (only) - Par amount of the VRDO, if any, held by liquidity providers (as a “Bank Bond”). This value reflects information available to the VRDO Remarketing Agent as of the date and time of the interest rate reset.	Decimal{Min0,Max10} ex: 100000000.000
	Aggregate Par Amount – Investors and Remarketing Agent	VRDOs (only) - Par amount of the VRDO, if any, held by parties other than a liquidity provider, which represents the aggregate par amounts held by the VRDO Remarketing Agent and by investors. This value reflects information available to the VRDO Remarketing Agent as of the date and time of the interest rate reset.	Decimal{Min0,Max10} ex: 100000000.000
	Identity of Tender Agent	VRDOs (only) - For each tender agent applicable to the VRDO, the identity of the tender agent. This value reflects information available to the VRDO Remarketing Agent as of the date and time of the interest rate reset.	String{Min1,Max90}
	Order Type	ARS (only) - Indication of whether an order is an order to buy, sell or hold at rate.	Enumerated Value: • B – Buy Order • H– Hold at Rate Order • S – Sell Order
	Order Interest Rate	ARS (only) - For orders to buy or hold at rate, the interest rate associated with such orders.	Fixed Decimal (in percent) – nn.nnn
	Order Entity	ARS (only) - Indication of whether an order placed or that was filled is for an investor, program dealer for its own account or issuer/conduit borrower of the ARS.	Enumerated Value: • I – Investor • P– Program Dealer • C – Issuer/Conduit Borrower
	Order Par Amount	ARS (only) - The aggregate par amount submitted to the auction for each order type, interest rate for buy and hold at rate orders, and order entity.	Decimal{Min0,Max10} ex: 100000000.000
	Filled Par Amount	ARS (only) - The aggregate par amount filled as a result of the auction for each order type, interest rate for buy and hold at rate orders and order entity.	Decimal{Min0,Max10} ex: 100000000.000
	Bid to Cover Ratio	ARS (only) - Ratio of the aggregate par amount of securities bid for the aggregate par amount of securities offered in an auction.	Decimal{Min0,Max5} ex: 1.450

SAMPLE XML MESSAGES

ARS

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SubscriberResponse xmlns="http://www.msrb.org/avts/subscriber_response" xmlns:ns2="http://www.msrb.org/avts/common"
xmlns:ns3="http://www.msrb.org/avts/submitter">
  <ResponseMessageHeader>
    <ns2:ResponseMessageID>0001910661</ns2:ResponseMessageID>
    <ns2:ResponseMessageTimeStamp>
      <ns2:Date>2010-04-27</ns2:Date>
      <ns2:Time>16:17:30</ns2:Time>
    </ns2:ResponseMessageTimeStamp>
  </ResponseMessageHeader>
  <SubscriberMessage>
    <SubscriberRequestDetails>
      <ns2:UserID>abcd</ns2:UserID>
      <ns2:SubscriberMessageTimeStamp>
        <ns2:Date>2010-04-27</ns2:Date>
        <ns2:Time>16:17:25</ns2:Time>
      </ns2:SubscriberMessageTimeStamp>
      <ns2:InformationType>ResetRate/Liquidity</ns2:InformationType>
      <Query>
        <FromSeqNum>000000000000101</FromSeqNum>
      </Query>
    </SubscriberRequestDetails>
    <QueryResults>
      <QueryStatus>
        <ns2:ResultCode>S001</ns2:ResultCode>
        <ns2:ResultMessage>100 Transaction(s) Included</ns2:ResultMessage>
      </QueryStatus>
      <ResultSets>
        <ResultSet SeqNum="000000000000101">
```

```
<Result>
  <ns2:ResultCode>S001</ns2:ResultCode>
  <ns2:ResultMessage>Success: Transaction retrieved</ns2:ResultMessage>
</Result>
<Transaction AVTSCtrlNum="496CCF5102584C84">
  <TransactionType>I</TransactionType>
  <Instrument>
    <ns2:CUSIP9>575827R85</ns2:CUSIP9>
    <ns2:InstrumentType>A</ns2:InstrumentType>
  </Instrument>
  <PublishDateTime>
    <ns2:Date>2009-01-30</ns2:Date>
    <ns2:Time>14:22:53</ns2:Time>
  </PublishDateTime>
  <DealerNames>
    <ns2:DealerMSRBName>Morgan Stanley & Co. Incorporated</ns2:DealerMSRBName>
    <ns2:DealerMSRBName>Citigroup Global Markets Inc.</ns2:DealerMSRBName>
    <ns2:DealerMSRBName>Goldman, Sachs & Company</ns2:DealerMSRBName>
    <ns2:DealerMSRBName>Merrill Lynch, Pierce, Fenner</ns2:DealerMSRBName>
  </DealerNames>
  <ns3:RateInformation>
    <ns3:InterestRateResetDateTime>
      <ns2:Date>2009-01-30</ns2:Date>
      <ns2:Time>13:25:40</ns2:Time>
    </ns3:InterestRateResetDateTime>
    <ns3:InterestRatePeriod>7</ns3:InterestRatePeriod>
    <ns3:InterestRatePostingDateTime>
      <ns2:Date>2009-01-30</ns2:Date>
      <ns2:Time>13:41:01</ns2:Time>
    </ns3:InterestRatePostingDateTime>
    <ns3:InterestRate>0.300</ns3:InterestRate>
    <ns3:MinDenomination>25000</ns3:MinDenomination>
    <ns3:RateType>M</ns3:RateType>
    <ns3:MinRate>0.100</ns3:MinRate>
    <ns3:MaxRate>0.300</ns3:MaxRate>
  </ns3:RateInformation>
  <Orders>
```

```
<Order>
  <OrderType>B</OrderType>
  <OrderEntity>I</OrderEntity>
  <OrderInterestRate>1.025</OrderInterestRate>
  <OrderParAmount>500000</InvestorOrderParAmount>
  <FilledParAmount>500000</InvestorFilledParAmount>
</Order>
<Order>
  <OrderType>O</OrderType>
  <OrderEntity>P</OrderEntity>
  <OrderInterestRate>1.025</OrderInterestRate>
  <OrderParAmount>500000</InvestorOrderParAmount>
</Order>
<Order>
  <OrderType>S</OrderType>
  <OrderEntity>C</OrderEntity>
  <OrderParAmount>500000</InvestorOrderParAmount>
  <FilledParAmount>500000</InvestorFilledParAmount>
</Order>
</Orders>
<BidToCoverRatio>1.45</BidToCoverRatio>
</Transaction>
<Transaction> ...
</Transaction>
</ResultSet>
<QueryResults>
</SubscriberResponse>
```

VRDO

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SubscriberResponse xmlns="http://www.msrb.org/avts/subscriber_response" xmlns:ns2="http://www.msrb.org/avts/common"
xmlns:ns3="http://www.msrb.org/avts/submitter">
  <ResponseMessageHeader>
    <ns2:ResponseMessageID>0001910661</ns2:ResponseMessageID>
    <ns2:ResponseMessageTimeStamp>
      <ns2:Date>2010-04-27</ns2:Date>
      <ns2:Time>16:17:30</ns2:Time>
    </ns2:ResponseMessageTimeStamp>
  </ResponseMessageHeader>
  <SubscriberMessage>
    <SubscriberRequestDetails>
      <ns2:UserID>abcd</ns2:UserID>
      <ns2:SubscriberMessageTimeStamp>
        <ns2:Date>2010-04-27</ns2:Date>
        <ns2:Time>16:17:25</ns2:Time>
      </ns2:SubscriberMessageTimeStamp>
      <ns2:InformationType>ResetRate/Liquidity</ns2:InformationType>
      <Query>
        <FromSeqNum>000000000000101</FromSeqNum>
      </Query>
    </SubscriberRequestDetails>
    <QueryResults>
      <QueryStatus>
        <ns2:ResultCode>S001</ns2:ResultCode>
        <ns2:ResultMessage>100 Transaction(s) Included</ns2:ResultMessage>
      </QueryStatus>
      <ResultSets>
        <ResultSet SeqNum="000000000000101">
          <Result>
            <ns2:ResultCode>S001</ns2:ResultCode>
            <ns2:ResultMessage>Success: Transaction retrieved</ns2:ResultMessage>
          </Result>
          <Transaction AVTSCtrlNum="16A1F522E83D3F83">
```

```
<TransactionType>I</TransactionType>
<Instrument>
  <ns2:CUSIP9>64972FHJ8</ns2:CUSIP9>
  <ns2:InstrumentType>V</ns2:InstrumentType>
</Instrument>
<PublishDateTime>
  <ns2:Date>2009-04-20</ns2:Date>
  <ns2:Time>10:27:25</ns2:Time>
</PublishDateTime>
<DealerNames>
  <ns2:DealerMSRBName>Raymond James & amp; Assoc., Inc.</ns2:DealerMSRBName>
</DealerNames>
<ns3:RateInformation>
  <ns3:NotificationPeriod>1</ns3:NotificationPeriod>
  <ns3:RateType>R</ns3:RateType>
  <ns3:InterestRatePeriod>1</ns3:InterestRatePeriod>
  <ns3:InterestRateResetDateTime>
    <ns2:Date>2009-04-20</ns2:Date>
    <ns2:Time>10:24:40</ns2:Time>
  </ns3:InterestRateResetDateTime>
  <ns3:InterestRate>0.350</ns3:InterestRate>
  <ns3:EffectiveDateIR>0.350</ns3:EffectiveDateIR>
  <ns3:MinRate>0.000</ns3:MinRate>
  <ns3:MaxRate>10.000</ns3:MaxRate>
  <ns3:MinDenomination>100000</ns3:MinDenomination>
  <ns3:AggregateParAmountBankBond>5000000</ns3:AggregateParAmountBankBond>
  <ns3:AggregateParAmountInvestorRA>1500000</ns3:AggregateParAmountInvestorRA>
  <ns3:LiquidityFacilities>
    <ns3:LiquidityFacility>
      <ns3:LiquidityFacilityType>L</ns3:LiquidityFacilityType>
      <ns3:LiquidityFacilityExpireDate>2011-06-20</ns3:LiquidityFacilityExpireDate>
      <ns3:IdentityOfLiquidityProvider>Piper Jaffray & amp; Co.</ns3:IdentityOfLiquidityProvider>
    </ns3:LiquidityFacility>
  </ns3:LiquidityFacilities>
  <ns3:TenderAgents>
    <ns3:TenderAgent>
      <ns3:IdentityOfTenderAgent>Piper Jaffray & amp; Co.</ns3:IdentityOfTenderAgent>
    </ns3:TenderAgent>
  </ns3:TenderAgents>
</ns3:RateInformation>
```

```
        </ns3:TenderAgent>
      </ns3:TenderAgents>
    </ns3:RateInformation>
  </Transaction>
<Transaction> ...
</Transaction>
</ResultSet>
<QueryResults>
</SubscriberResponse>
```