Requirements Specification

for

Tier I Automated Accounting and Reporting Systems

Montana Department of Justice – Gambling Control Division

July 23, 2013
Version 1.8.3

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Revision History

Version	Date	Modification
1.8.3	7/23/2013	Clarified REQ-TIERI-SYSTEM-04, REQ-TIERI-SYSTEM-05, REQ-TIERI-SYSTEM-10, REQ-TIERI-DATAFILE-03, REQ-TIERI-DATAFILE-37. Modified REQ-TIER1-SYSTEM-20, REQ-TIER1-SYSTEM-21 and REQ-TIERI-DATAFILE-10, Appendix C.
1.8.2	4/10/2013	Modified REQ-TIERI-REPORTING-01and REQ-TIERI-REPORTING-03 meter record file reporting interval and time.
1.8.1	3/7/2013	Added REQ-TIER1-SYSTEM-21 and REQ-TIER1-SYSTEM-22 Clarified REQ-TIER1-SYSTEM-06, REQ-TIER1-DATAFILE-21 and REQ-TIER1-DATAFILE-22.
1.8	02/27/2013	Added REQ-TIER1-SYSTEM-16, REQ-TIER1-SYSTEM-17, REQ-TIER1-SYSTEM-19 and REQ-TIER1-SYSTEM-19, REQ-TIER1-SYSTEM-20 and Section 2.4 Source Code Requirements. REQ-TIER1-SYSTEM-03 clarified CRC, REQ-TIERI-DATAFILE-01 clarified record, REQ-TIER1-DATAFILE-10 clarified EOQ, REQ-TIER1-DATAFILE-10 added event code C1 and C2, REQ-TIER1-DATAFILE-21 clarified record, REQ-TIER1-DATAFILE-22 clarified record and REQ-TIER1-DATAFILE-27 clarified record. Updated Appendix A: Glossary
1.7	12/11/2012	REQ-TIER1-SYSTEM-06 clarified Web User ID. REQ-TIER1-SYSTEM-14 clarified long poll 7B. REQ-TIER1-DATAFILE-10 clarified *fblnQuarterEnd* field reporting. Appendix A added "Day".
1.6	11/30/2012	REQ-TIER1-SYSTEM-04 added SAS long poll 6F and referenced data file of VGM Program Numbers that don't supporting extended meters; REQ-TIER1-SYSTEM-05 added the exclusion of SAS exception 7A for some program ID's; REQ-TIER1-SYSTEM-11 clarified D1 and D2 as consecutive records; REQ-TIERI- SYSTEM-14 added SAS long poll 7B; REQ-TIER1-DATAFILE-01 clarified last record in the file; REQ-TIERI-DATAFILE-05 modified meter length; Updated Appendix A: Glossary; Added Appendix D SAS to MT Cross Reference.
1.5	8/24/2012	REQ-TIERI- SYSTEM-09 clarified EOQ date field and extended EOQ reporting from seven to fourteen days. REQ-TIERI-DATAFILE-05 modified for fstrReportTime field to report seconds. REQ-TIERI-DATAFILE-22 clarified time stamping of the record.
1.4	8/14/2012	REQ-TIER1-SYSTEM-15, REQUIREMENT-TIER1-DATAFILE-05, and REQUIREMENT-TIER1-DATAFILE-14 were modified to report "0" for fblnAppStart.
1.3	8/1/2012	Added REQ-TIER1-SYSTEM-2.1 and REQ-TIER1-SYSTEM-15. REQ-TIER1-SYSTEM-03 clarified seed value and CRC calculation. REQ-TIER1-SYSTEM-04 added SAS long poll $1A. REQ-TIER1-SYSTEM-09 clarified FY quarters. REQ-TIER1-SYSTEM-11 exclude $$CR for check. REQ-TIER1-SYSTEM-12 clarified E1 event record reporting; corrected meter labels. REQ-TIER1-SYSTEM-13 clarified Start Record reporting constraints. REQ-TIER1-SYSTEM-14 clarified initial VGM configuration. REQ-TIER1-DATAFILE-5 clarified fblnService, fcurCoinInHard, fcurBillInHard, fcurTotalPlayedHard, fcurTotalWonHard, fcurTotalPaidSoft, flngGamesPlayedSoft, flngGamesWonSoft, fstrUserId field reporting constraints. REQ-TIER1-DATAFILE-10 clarified fblnQuarter field reporting constraints. REQ-TIER1-DATAFILE-12 clarified fstrRouteOwned field reporting constraints.

		REQ-TIER1-DATAFILE-15 Included $$CR in the formula; corrected meter labels. REQ-TIER1-DATAFILE-28, 29, 30, 31 corrected meter labels. Appendix A Glossary corrected meter labels.
1.2	10/13/2011	Minor spelling corrections; title page formatting; graphical alterations to Figure 1 to improve readability and reflect Montana law.
1.1	8/6/2010	Changes based on review.
1.0	7/7/2010	Initial release of document.

1.   Introduction

1.1   Purpose

The purpose of this document is to define the requirements specifications for Tier I Automated Accounting and Reporting Systems.

1.2   Architecture Diagram

The diagram in Figure 1 shows the data flow from a VGM to the State of Montana tax database. The architecture of the Tier I system and reporting intervals may vary.
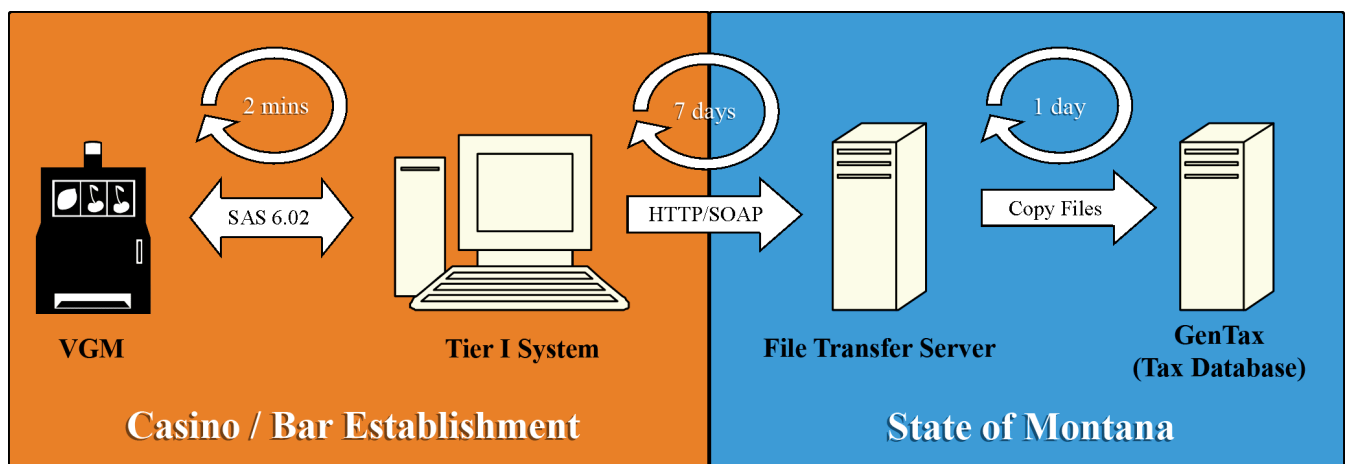

Figure 1 - System Architecture Diagram

1.3   Intended Audience

The intended audiences for this requirements specification document are new and existing Tier I system manufacturers who wish to submit Tier I equipment for approval to operate in the State of Montana.

1.4   References

File Transfer Service SOAP Operations, https://transfer.mt.gov/api/filetransferservice.asmx

Montana SAS Serial Protocol Implementation Guide, https://doj.mt.gov/gaming/vgm-tier1-testing/

US Official Time, http://www.time.gov

VGM Web Services, https://app.mt.gov/gambling

2.   Requirements

2.1   System Requirements

REQ-TIERI-SYSTEM-01: The Tier I System shall communicate with VGMs using the SAS 6.00 or later protocol.

REQ-TIERI-SYSTEM-02: The Tier I System shall keep accurate time in the Mountain Time Zone and adjust for daylight savings using the official US time (http://www.time.gov) as a source.

REQ-TIERI-SYSTEM-02.1: The Tier I System shall account for a leap year properly.

REQ-TIERI-SYSTEM-03: The Tier I System shall implement the CCITT 16-bit CRC algorithm defined in Appendix B to signature over all static program components. The Tier I System shall provide an operator interface that allows a 16-bit hex seed to be inputted and used in the CRC calculation. The Tier I system shall display the outcome of the CRC calculation to the operator in a reasonable amount of time. This CRC signature feature shall be used by regulators to ensure only approved Tier I Systems are operational in the field. Include SMIB software in the calculations, if applicable. If credentials are required for initiation of CRC calculation, they must be hard-coded.

REQ-TIERI-SYSTEM-04: The Tier I System shall poll all connected VGMs at a maximum of two minute intervals to retrieve current meter values and paytable ID. Current meter values shall be retrieved with a single SAS long poll $6F where extended meters are supported by a VGM. If extended meters are not supported by a VGM, current meter values shall be retrieved using SAS long polls $0F and $1A. Paytable ID (Program Name) shall be retrieved with SAS long poll $1F. The system must incorporate a data file containing VGM Paytable IDs (Program Names) that do not support extended meters; this file will be used to determine which SAS long poll(s) to use for obtaining current meters (contact GCD TSS for the file). See Appendix A for meter definitions and Appendix D for meter cross-reference.

REQ-TIERI-SYSTEM-05: The Tier I System shall immediately poll the VGM for their current meter values and Paytable ID (Program Name) when the VGM reports any of the following exceptions and create a meter record in the current data file. The system must incorporate a data file containing VGM Paytable IDs (Program Names) that don't support SAS exception $7A properly (Soft Meters Reset to Zero); if the Paytable ID (Program Name) is in the file do not report the $7A record (contact GCD TSS for the file).

SAS Event Exception	Event Description	SAS Event Exception	Event Description
$11	Slot Door Opened	$19	Cashbox Door Opened
$12	Slot Door Closed	$1A	Cashbox Door Closed
$13	Drop Door Opened	$1B	Cashbox Removed
$14	Drop Door Closed	$1C	Cashbox Installed
$15	Card Cage Opened	$1D	Belly Door Opened
$16	Card Cage Closed	$1E	Belly Door Closed
$17	AC Power Applied	$3C	Operator Changed Options
$18	AC Power Lost	$7A	Soft Meter Reset to Zero

REQ-TIERI-SYSTEM-06: The Tier I System shall provide an operator interface that allows the entry of the VGM Web User ID, file transfer server URL, and file transfer username/password to be input or changed. The VGM Web User ID is associated with the VGM owner; one establishment could have several Web User IDs.

REQ-TIERI-SYSTEM-07: The Tier I System shall provide an operator interface that allows the entry of the GOA number. The Tier I System shall provide an operator interface for each connected VGM that allows the entry of the MDR number and a Boolean for VGMs owned by a route operator.

REQ-TIERI-SYSTEM-08: The Tier I System shall have a unique software version ID that can be displayed to the operator.

REQ-TIERI-SYSTEM-09: The Tier I System may provide an operator interface to select a manual EOQ date up to fourteen days before the end of the current quarter. When the manual EOQ date is exceeded, the Tier I System shall adjust the EOQ date field for all subsequent records to be the next quarter for REQ-TIERI-DATAFILE-09. The manual EOQ date must be set forward to the next year at midnight of the quarter for REQ-TIERI-DATAFILE-09 (FY EOQ 1 is 9/30, FY EOQ 2 is 12/31, FY EOQ 3 is 3/31 and FY EOQ 4 is 6/30)

REQ-TIERI-SYSTEM-10: The Tier I System shall poll all connected VGMs for their current meters and Paytable ID (Program Name) and create records with *fstrEventCode* of NULL in the current data file at 5:00 AM every day for an EOD event.

REQ-TIERI-SYSTEM-11: The Tier I System shall compare the last known meter readings for a VGM compared to any newly acquired meter readings any time meter readings are retrieved. If any new meter value is found to be MLP, excluding $$CR, the Tier I system shall create two consecutive meter records. The first meter record shall have the *fstrEventCode* of D1 using the older meter values. The second meter record shall have the *fstrEventCode* of D2 using the newest meter values.

REQ-TIERI-SYSTEM-12: The Tier I System shall create a second EOD meter record with the *fstrEventCode* of E1 if the meters are detected to be out of balance using the formula $$TL + $$WN = $$PL + $$PD + $$CR, using the last known meter values. The Tier I System shall poll for the $$CR using SAS poll $1A.

REQ-TIERI-SYSTEM-13: The Tier I System shall create a meter record in the current data file with the *fstrEventCode* of E2 instead of the EOD meter record fstrEventCode of Null if the VGM is detected to be offline using the last known meter values.

REQ-TIERI-SYSTEM-14: The Tier I System shall recognize when a new VGM is connected, and force Operator configuration. The VGMID is obtained using SAS long poll $7B if supported by the VGM, otherwise the system must force operator configuration of the VGMID. The VGM supports $7B if it returns a number greater than 100,000 and can be assumed to be reporting the VGMID correctly.

REQ-TIERI-SYSTEM-15: The Tier I System shall create a Start meter record with *fstrEventCode* *of NULL* and fblnAppStart of 0 when a VGM is initially configured and brought on-line. A Start meter record is never again reported unless the VGM is withdrawn from play by LOW and subsequently relicensed.

REQ-TIERI-SYSTEM-16: The Tier I System shall comply with SAS timing requirements for Inter-Byte Delay Time as defined in the GSA SAS Protocol Version 6.00 or later.

REQ-TIER1-SYSTEM-17: The Tier I System shall retain data when power is cycled.

REQ-TIER1-SYSTEM-18: SMIB shall be mounted securely within the VGM without the use of adhesive type anchors or shall be enclosed within a protective housing.

REQ-TIER1-SYSTEM-19: Long Poll responses shall be verified using a CRC16 at the Tier I System communications layer closest to the VGM, such as a SMIB.

REQ-TIER1-SYSTEM-20: For an existing VGM, the Tier I System shall recognize a change in any one of the following VGM ownership changes:

> GOA (*fstrLocationPermit*) to MDR (*fstrRouteOperator*)
> MDR (*fstrRouteOperator*) to MDR (*fstrRouteOperator*)
> MDR (*fstrRouteOperator*) to GOA(*fstrLocationPermit*)

Following the change in ownership, two meter records shall be created. The first record shall contain the *fstrEventCode* of C1 using the old ownership and current meters. The second record shall have *fstrEventCode* of C2 using new ownership and the current meters.

REQ-TIER1-SYSTEM-21: The Tier I System shall have an option to permanently remove VGM(s) from the system. When a VGM is removed from the system, a final meter record shall be created with an event code R1 using the date, time and current meters when it was removed.

REQ-TIER1-SYSTEM-22: The Tier I System shall provide an automatic notification to the Operator and/or Route Operator via a means approved by the Division (audible, email, etc.) when the Tier 1 System loses communication with a configured and communicating VGM.

2.2 Data File Requirements

REQ-TIERI-DATAFILE-01: The Tier I data file shall contains meter records for all VGMs connected to the Tier I System in the same file. Each meter record shall be comprised of valid data corresponding to the time it was created. The EOD or EOQ meter record must be the last chronological meter record for each VGM in the data file. If a VGM is offline greater than 10 minutes, the Tier I System shall disregard any VGM buffered events received after VGM communication is re-established.

REQ-TIERI-DATAFILE-02: Meter records within the Tier I data file shall be ordered by their occurrence.

REQ-TIERI-DATAFILE-03: A new Tier I data file shall be created each day.

REQ-TIERI-DATAFILE-04: The Tier I data file shall have the naming convention "<GOA number>_<YYYYMMDD>.txt" where <GOA number> contains the current GOA number input via REQ-TIERI- SYSTEM-07 and <YYYYMMDD> is the date the file is created. The Tier I data file shall have a .txt file extension.

REQ-TIERI-DATAFILE-05: Each Tier I meter record shall have the following fields in each record:

Field Name	Description	Type	Format

Field Name	Description	Type	Format
fstrVGMId	VGMID	String	xxxxxx
fdtmQuarter	Quarter Date	Date	MMDDYYYY
fblnQuarterEnd	EOQ Flag	Boolean	0 or 1
fstrLocationPermit	GOA Number	String	xxxxxxx-xxx-GOA
fstrRouteOperator	MDR Number	String	xxxxxxx-xxx-MDR
fblnRouteOwned	Route Owned VGM	Boolean	0 or 1
fblnAppStart	New Meter Reading	Boolean	0
fstrEventCode	Event Code	String	
fblnService	Service Report Flag	Boolean	0
fstrServPartBef	Before Service Part Code	String	
fstrServLaborBef	Before Service Labor Code	String	
fstrServPartAft	After Service Part Code	String	
fstrServLaborAft	After Service Labor Code	String	
fdtmReportDate	Report Date	Date	MMDDYYYY
fstrReportTime	Report Time	String	HHMMSS
fcurCoinInHard	Coin In Hard	Currency	0
fcurBillInHard	Bill In Hard	Currency	0
fcurTotalPlayedHard	Total Played Hard	Currency	0
fcurTotalWonHard	Total Won Hard	Currency	0
fcurTotalPaidHard	Total Paid Hard	Currency	0
fcurTotalInSoft	Total In Soft	Currency	xxxxxxxx.xx
fcurTotalPlayedSoft	Total Played Soft	Currency	xxxxxxxx.xx
fcurTotalWonSoft	Total Won Soft	Currency	xxxxxxxx.xx
fcurTotalPaidSoft	Total Paid Soft	Currency	xxxxxxxx.xx
flngGamesPlayedSoft	Total Games Played Soft	Integer	0
flngGamesWonSoft	Total Games Won Soft	Integer	0
fstrSoftwareVersion	Tier I System Software Version	String	
fstrTier	Tier Data Submitted From	String	1
fstrUserId	UserId that submitted this data	String	xxxxxx_xxxx
fstrProgID	Paytable ID (Program Name)	String	xxxxxx

REQ-TIERI-DATAFILE-06: Each Tier I meter record shall delimit between each field in REQ-TIERI-DATAFILE-01 using the "|" character. An example meter record in the data file would look like:

"900900|03312008|0|9999999-003-GOA|9999999-004-MDR|1|0||0|||||02192008|0503|0|0|0|0 |0|166570.00|638509.60|579213.95|104274.35|0|0|1.09.0.00|1|BENTAX_0208|MXPGM1"

* An Excel program used to verify data file format can be obtained from Gambling Control TSS upon request.

REQ-TIERI-DATAFILE-07: The Tier I data file shall contain CR+LF ASCII characters at the end of each meter record.

REQ-TIERI-DATAFILE-08: The *fstrVGMId* field in each meter record shall contain the six-digit VGMID for the VGM associated with the meter record.

REQ-TIERI-DATAFILE-09: The *fdtmQuarter* field in each meter record shall contain the current filing quarter date (033120xx, 063020xx, 093020xx, or 123120xx).

REQ-TIERI-DATAFILE-10: The *fblnQuarterEnd* field in each meter record shall contain "0". In the case the *fstrEventCode* is NULL or E2 signifying an EOD event and the EOD record date equals the EOQ date + 1 day, *fblnQuarterEnd* field shall contain "1". In the case the *fstrEventCode* is C1, the *fblnQuarterEnd* field shall always contain "1".

REQ-TIERI-DATAFILE-11: The *fstrLocationPermit* field in each meter record shall contain the GOA number input via REQ-TIERI- SYSTEM-07 in the format "xxxxxxx-xxx-GOA".

REQ-TIERI-DATAFILE-12: The *fstrRouteOperator* field in each meter record shall contain the MDR number input via REQ-TIERI- SYSTEM-07 in the format "xxxxxxx-xxx-MDR" or NULL if VGM is establishment-owned.

REQ-TIERI-DATAFILE-13: The *fblnRouteOwned* field in each meter record shall contain "1" for TRUE or "0" for FALSE input via REQ-TIERI- SYSTEM-07.

REQ-TIERI-DATAFILE-14: The *fblnAppStart* field in each meter record shall always contain "0".

REQ-TIERI-DATAFILE-15: The *fstrEventCode* field in each meter record shall contain one of the following corresponding event codes based on the action that caused the meter record to be created:

Event Code	Description	Cause
NULL	EOD	Meter Readings at 5:00 AM
11	Slot Door Opened	Received SAS Exception $11
12	Slot Door Closed	Received SAS Exception $12
13	Drop Door Opened	Received SAS Exception $13
14	Drop Door Closed	Received SAS Exception $14
15	Card Cage Opened	Received SAS Exception $15
16	Card Cage Closed	Received SAS Exception $16
17	AC Power Applied	Received SAS Exception $17
18	AC Power Lost	Received SAS Exception $18
19	Cashbox Door Opened	Received SAS Exception $19
1A	Cashbox Door Closed	Received SAS Exception $1A
1B	Cashbox Removed	Received SAS Exception $1B
1C	Cashbox Installed	Received SAS Exception $1C
1D	Belly Door Opened	Received SAS Exception $1D
1E	Belly Door Closed	Received SAS Exception $1E
3C	Operator Changed Options	Received SAS Exception $3C
7A	Soft Meter Reset to Zero	Received SAS Exception $7A
D1	Before MLP	MLP
D2	After MLP	MLP
E1	MOB	Soft MOB $$TL+$$WN = $$PL+$$PD + $$CR
E2	VGM Offline	Lost Connection With VGM
C1	Before Tier 1 GOA Number or MDR Number Change	Old Configuration
C2	After Tier 1 GOA Number or	New Configuration

	MDR Number Change	
R1	The last meter record for an active VGM that was removed from configuration	VGM removed from play in the establishment or a GOA to GOA VGM ownership change

REQ-TIERI-DATAFILE-16: The *fblnService* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-17: The *fstrServPartBef* field in each meter record shall be NULL.

REQ-TIERI-DATAFILE-18: The *fstrServLaborBef* field in each meter record shall be NULL.

REQ-TIERI-DATAFILE-19: The *fstrServPartAft* field in each meter record shall be NULL.

REQ-TIERI-DATAFILE-20: The *fstrServLaborAft* field in each meter record shall be NULL.

REQ-TIERI-DATAFILE-21: The *fdtmReportDate* field in each meter record shall contain the date from the Tier I system when the meter record is created except for D1, which shall contain the date the meters were read.

REQ-TIERI-DATAFILE-22: The *fstrReportTime* field in each meter record shall contain the time from the Tier I system when the meter record is created except for D1, which shall contain the time the meters were read. No two meter records for a VGM on a given date can have the same time stamp.

REQ-TIERI-DATAFILE-23: The *fcurCoinInHard* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-24: The *fcurBillInHard* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-25: The *fcurTotalPlayedHard* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-26: The *fcurTotalWonHard* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-27: The *fcurTotalPaidHard* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-28: The *fcurTotalInSoft* field in each meter record shall contain the $$TL electronic meter value from the VGM.

REQ-TIERI-DATAFILE-29: The *fcurTotalPlayedSoft* field in each meter record shall contain $$PL electronic meter value from the VGM.

REQ-TIERI-DATAFILE-30: The *fcurTotalWonSoft* field in each meter record shall contain $$WN electronic meter value from the VGM.

REQ-TIERI-DATAFILE-31: The *fcurTotalPaidSoft* field in each meter record shall contain $$PD electronic meter value from the VGM.

REQ-TIERI-DATAFILE-32: The *flngGamesPlayedSoft* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-33: The *flngGamesWonSoft* field in each meter record shall contain "0".

REQ-TIERI-DATAFILE-34: The *fstrSoftwareVersion* field in each meter record shall contain the software version string of the Tier I System displayed in REQ-TIERI- SYSTEM-08**.**

REQ-TIERI-DATAFILE-35: The *fstrTier* field in each meter record shall contain "1".

REQ-TIERI-DATAFILE-36: The *fstrUserId* field in each meter record shall contain the VGM services Web User ID input in REQ-TIERI- SYSTEM-06 corresponding to the owner of the VGM for the respective record.

REQ-TIERI-DATAFILE-37: The *fstrProgID* field in each meter record shall contain the VGM's Paytable ID (Program Name) string, when the meters were received for the record.

2.3   Reporting Requirements

REQ-TIERI-REPORTING-01: The Tier I System shall report to the State of Montana by uploading the data file to the programmed file transfer server in REQ-TIERI- SYSTEM-06 once a day.

REQ-TIERI-REPORTING-02: The Tier I System shall not report faster than a daily interval.

REQ-TIERI-REPORTING-03: The Tier I System shall report on or before 5:30AM on the day it is reporting.

REQ-TIERI-REPORTING-04: The Tier I System shall communicate with the file transfer server using SOAP 1.1 or 1.2 over HTTPS. More info can be found in Appendix C.

REQ-TIERI-REPORTING-05: The Tier I System shall attempt to report once a day every day until successful if the connection to the file transfer server is down or errors occur.

2.4   Software Source Code Requirements

REQ-TIERI-SOURCE-01: The Tier I System source code shall produce the exact same binary image every time it is built regardless of the build machine, location, time, etc. Minor differences may be permitted but all differences must be fully documented and externally verifiable. This requirement should be a deciding factor when choosing the OS platform and/or build environment. The technical services lab needs the ability to build the Tier 1 production image from source and match it to the submitted binary to ensure the correct source was analyzed and archived.

REQ-TIER1-SOURCE-02: The Tier I System source code shall not contain source that is not compiled into the production or test image.

REQ-TIERI-SOURCE-03: The Tier I System source code shall not contain files that are named the same but have different case in the same directory. This causes problems during source analysis on case insensitive platforms like Windows.

REQ-TIERI-SOURCE-04: The Tier I System source code shall not contain version-specific strings in the file or directory names. This causes issues during the diffing of two versions of source code.

REQ-TIERI-SOURCE-05: The Tier I System source code build environment shall be reproducible and documented.

Appendix A: Glossary

$$CR – Current Credit Meter.

$$TL – Total Coin and Bills In Meter.

$$PD – Total Paid Meter.

$$PL –Total Played Meter.

$$WN – Total Won Meter.

Day – Starts at 5:00:00am and ends at 4:59:59 am.

EOD – End of Day

EOQ – End of Quarter

GCD – Gambling Control Division

GenTax – Tax database used by the State of Montana and created by Fast Enterprises.

GOA – defined as Gambling Operator Account; a unique license number assigned by the State of Montana to licensed establishments.

HTTP – defined as Hypertext Transfer Protocol, is an Application Layer protocol for distributed, collaborative, hypermedia information systems. HTTP is a request-response protocol standard for client-server computing.

LOW – Letter of Withdrawal

MDR – defined as Manufacturer/Distributer/Route Account; a unique license number assigned by the State of Montana.

MLP – Meter Less than Previous

MOB – Meters Out of Balance

NULL – an empty string that has no size nor value.

SAS – defined as Slot Accounting System protocol; a protocol designed to automate slot machine meter reporting and event logging.

SMIB – System-Machine Interface Board

SOAP – defined as Simple Object Access Protocol; a protocol specification for exchanging structured information in the implementation of Web Services in computer networks. It relies on eXtensible Markup Language (XML) as its message format, and usually relies on other Application Layer protocols (most notably Remote Procedure Call (RPC) and HTTPS) for message negotiation and transmission.

TSS – Technical Services Section

VGM – Video Gambling Machine.

VGMID – defined as Video Gambling Machine Identification number; a unique number assigned to each VGM by the State of Montana and located as a stickered barcode on each VGM.

Appendix B: CRC Algorithm

Sourced from IGT SAS Protocol Version 6.02 Section 5.1.

```
//Function: CRC
//Purpose:      Calculate the 16-bit CRC of a string using
//              a byte-oriented tableless algorithm. The
//              routine inputs are the buffer pointer, the
//              buffer 1ength, and the seed for the
//              calculation. The magic number 010201 octal
//              is derived from the CRC po1ynomial
//              x^16+x^12+x^5+1.
//Passed in:    unsigned char, int, unsigned short
//Passed out:   unsigned short

unsigned short CRC (unsigned char *s, int len, unsigned short crcval)
{
      register unsigned c,q;
      for (; len; len--)
      {
            c = *s++;
            q = (crcval ^ c) & 017;
            crcval = (crcval >> 4) ^ (q *010201);
            q  = (crcval ^ (c >> 4)) & 017;
            crcval = (crcval >> 4) ^ (q * 010201);
      }

      return (crcval);
}
```

Appendix C: File Transfer SOAP Operations

More information on SOAP operations for the File Transfer Service can be found on the Web at: https://transfer.mt.gov/api/filetransferservice.asmx. Support and access rights can be requested from ITSD on the Web at: http://servicedesk.mt.gov.

For Test or Production account credentials please contact GCD TSS.

Appendix D: SAS to MT Cross Reference

SAS Meter Label	SAS Long PollCommand	SAS Meter Code Value (Only applies to 6F)	Montana Meter Label	Montana Meter Name
Total Coin In	0F or 6F	0000	$$PL	Money Played
Total Coin Out	0F or 6F	0001	$$WN	Money Won
Total Canceled Credits	0F or 6F	0004	$$PD	Money Paid
Total Drop	0F or 6F	0024	$$TL	Money In
Current Credits	1A or 6F	000C	$$CR	Current Credits

SAS Gaming Machine Asset Number/House ID to VGMID Cross Reference

SAS Label	SAS Long Poll Command	Montana Label
Gaming Machine Asset Number/House ID	7B	VGMID