GE Healthcare

Mac-Lab/CardioLab HL7 Export Specification

Reference Manual

2047900-111B EN
Version 6.9

Introduction

Document Use

This document is intended for use by systems engineering personnel involved in the transfer of information between the Hospital Information System (HIS) and the Mac-Lab/CardioLab.

Revision History

Revision	Date	Comments
A	15 August 2011	Initial release of document.
B	10 May 2012	Updated with serviceability improvements.

Dangers, Warnings, and Cautions

CAUTION: SALE OF DEVICE

U.S. federal law restricts this device to sale by or on the order of a physician.

Message Construction Rules

Message Delimiters

The interface utility must use HL7's v2.x recommended message delimiters:

- Segment Terminator - <cr> (hex 0D)
- Field Separator - |
- Component Separator - ^
- Subcomponent Separator - &
- Repetition Separator - ~
- Escape Character - \

Message Header Segment (MSH)

The MSH is used to convey intent, content, source, destination, and some specifics of the syntax of a message. The following table describes the MSH attributes:

SEQ	LEN	DT	GEHC Required Field	ITEM #	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	1	ST	R	00001	Field Separator	"|"
2	4	ST	R	00002	Encoding Characters	"^~\&"
3	180	HD	R	00003	Sending Application	“MACLAB 6.9” or “CARDIOLAB 6.9”
4	180	HD	R	00004	Sending Facility	“GEMS”
5	5180	HD	O	00005	Receiving Application	Configured via DataExportConfig utility - HL7 tab
6	6180	HD	O	00006	Receiving Facility	Configured via DataExportConfig utility - HL7 tab
7	26	TS	R	00007	Date/Time Of Message	YYYYMMDDHHMMSS
8	40	ST	O	00008	Security	Not Used
9	7	CM	R	00009	Message Type	"ORU^R01"
10	20	ST	R	00010	Message Control ID	“CATH_YYYYMMDDHHMMSS” or “EP_YYYYMMDDHHMMSS”
11	3	PT	R	00011	Processing ID	“P”, “D”, or “T”
12	60	VID	R	00012	Version ID	“2.3”
13	15	NM	O	00013	Sequence Number	Not Used
14	180	ST	O	00014	Continuation Pointer	Not Used
15	2	ID	O	00015	Accept Acknowledgment Type	Not Used
16	2	ID	O	00016	Application Acknowledgment Type	Not Used
17	2	ID	O	00017	Country Code	Not Used
18	16	ID	O	00692	Character Set	Not Used
19	60	CE	O	00693	Principal Language Of Message	Language Identifier
20	20	ID	O	01317	Alternate Character Set Handling Scheme	Not Used

Example MSH Segment:

MSH|^~\&|MACLAB 6.8|GEMS|RECVAPP|RECVFAC|20020523214333||ORU^R01|CATH_20041108214333|P|2.3|||||||1033||

Patient Identification Segment (PID)

The PID is used to convey patient identification information. This segment contains permanent patient identifying and demographic information. The following table describes the PID attributes:

SEQ	LEN	DT	GEHC Required Field	ITEM#	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	00104	Set ID - PID	Not Used
2	20	CX	O	00105	Patient ID (External)	Not Used
3	20	CX	R	00106	Patient Identifier List (Internal)	Patient.MRN_PatientID
4	20	CX	O	00107	Alternate Patient ID - PID	Not Used
5	48	XPN	R	00108	Patient Name	|Patient.LastName^Patient.FirstName^Patient.MiddleName|
6	48	XPN	O	00109	Mother's Maiden Name	Not Used
7.1	26	TS	O	00110	Date/Time of Birth	Patient.BirthDate (YYYYMMDD)
7.2	4	ST	O		Patient's Age at Time of Study	DemographicResults.value where indexNum = 4
7.3	8	ST	O		Patient's Age at Time of Study Units	"Days", "Months", "Years"
8	1	IS	R	00111	Sex	Gender.Gender (formatted as M, F or U)
9	48	XPN	O	00112	Patient Alias	Not Used
10	80	CE	O	00113	Race	RaceType.Race
11	106	XAD	O	00114	Patient Address - Home	|Patient.PatientAddress1^Patient.PatientAddress2^Patient.City^Patient.StateOrProvince^Patient.Zip^Country.Abbrev|
12	4	IS	O	00115	County Code	Not Used
13	40	XTN	O	00116	Phone Number - Home	Patient.PhoneHome
14	40	XTN	O	00117	Phone Number - Business	Patient.PhoneWork
15	60	CE	O	00118	Primary Language	Not Used
16	80	CE	O	00119	Marital Status	Not Used
17	80	CE	O	00120	Religion	Not Used
18	20	CX	O	00121	Patient Account Number	Study.AccountNumber
19	16	ST	O	00122	SSN Number - Patient	Patient.SSN
20	25	DLN	O	00123	Driver's License Number - Patient	Not Used
21	20	CX	O	00124	Mother's Identifier	Not Used
22	80	CE	O	00125	Ethnic Group	Not Used
23	60	ST	O	00126	Birth Place	Not Used

SEQ	LEN	DT	GEHC Required Field	ITEM#	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
24	1	ID	O	00127	Multiple Birth Indicator	Not Used
25	2	NM	O	00128	Birth Order	Not Used
26	80	CE	O	00129	Citizenship	Not Used
27	60	CE	O	00130	Veterans Military Status	Not Used
28	80	CE	O	00739	Nationality	Not Used
29	26	TS	O	00740	Patient Death Date and Time	Not Used
30	1	ID	O	00741	Patient Death Indicator	Not Used

Example PID Segment:

PID|||20021986||Hensley^Sonia^D||19650514^37.05^Years|F||Caucasian|241 Kentucky ST^^Kingston^TX^ 77379^US||281-555-1212|832-496-1212||||66778899|222-33-4444||||||||||||

Observation Request Segment (OBR)

The OBR is the report header for clinical data reporting. It identifies the observation set represented by the atomic observations that follow. The following table describes the OBR attributes:

SEQ	LEN	DT	GEHC Required Field	ITEM #	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	00237	Set ID OBR	Begin sequential counter
2	22	EI	O	00216	Placer Order Number	Ord.PlacerOrderNum
3	80	EI	R	00217	Filler Order Number	Study.StudyUID_CaseDP
4.1	4	CE	C	00238	Event Phase Number	Sequential phase counter - start w/ 0
4.2	128	CE	R	00238	Event Phase Name	EventPhase.Name
4.3	16	CE	O	00238	Phase Datapoint	Datapoint for phases
4.4	16	CE	R	00238	Universal Svc ID	HIS.UsvcID_Code
4.5	64	CE	R	00238	Universal Svc ID Description	HIS.UsvcID_Desc
4.6	16	CE	R	00238	Universal Svc ID Coding System	HIS.UsvcID_CodeSys
5	2	ID	O	00239	Priority	Not Used
6	26	TS	O	00240	Requested Date/Time	Not Used
7	26	TS	R	00241	Observation Date/Time #	Study.StartTime (formatted as YYYYMMDDHHMM)

SEQ	LEN	DT	GEHC Required Field	ITEM #	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
8	26	TS	O	00242	Observation End Date/ Time #	EventBlock1.EventComment for "Case End" logic if present (formatted as YYYYMMDDHHMM)
9	20	CQ	O	00243	Collection Volume	Not Used
10	60	XCN	O	00244	Collector Identifier	Not Used
11	1	ID	O	00245	Specimen Action Code	Not Used
12	60	CE	O	00246	Danger Code	Not Used
13	300	ST	O	00247	Relevant Clinical Info.	Not Used
14	26	TS	O	00248	Specimen Received Date/Time	Not Used
15	300	CM	O	00249	Specimen Source	Not Used
16	80	XCN	O	00226	Ordering Provider	Not Used
17	40	XTN	O	00250	Order Callback Phone Number	Not Used
18	60	ST	O	00251	Placer Field 1	HIS.PlacerField1 (Used by some sites as the “Accession Number”)
19	60	ST	O	00252	Placer Field 2	Not Used
20.1	128	ST	O	00253	Registry/Group Node Name	Registry/Cust Form Node Name[1]
20.2	40	ST	O	00253	Registry/Group Node GUID	Registry/Cust Form Node GUID[2]
20.3	16	ST	O	00253	Registry/Group Node version	Registry/Cust Form Node Version[3]
20.4	128	ST	O	00253	Registry/Group Node Comments	Registry/Cust Form Node Comments[4]
21	60	ST	O	00254	Filler Field 2	Not Used
22	26	TS	O	00255	Results Rpt/Status Chng - Date/Time	Not Used
23	40	CM	O	00256	Charge to Practice	Not Used
24	10	ID	R	00257	Diagnostic Service Sect ID	"CTH" or "EC"
25	1	ID	C	00258	Result Status	"F"
26	400	CM	O	00259	Parent Result	Not Used
27	200	TQ	O	00221	Quantity/Timing	Not Used
28	150	XCN	O	00260	Result Copies To	Not Used
29	200	CM	O	00261	Parent	Not Used
30	20	ID	O	00262	Transportation Mode	Not Used
31	300	CE	O	00263	Reason for Study	Not Used

SEQ	LEN	DT	GEHC Required Field	ITEM #	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
32	200	CM	O	00264	Principal Result Interpreter	|EventStaff.SSN_ID^EventStaff.LastName^EventStaff.FirstName^EventStaff.MiddleName^StaffTitle.Name| where this is the primary physician.
33	200	CM	O	00265	Assistant Result Interpreter	Not Used
34	200	CM	O	00266	Technician	Not Used
35	200	CM	O	00267	Transcriptionist	Not Used
36	26	TS	O	00268	Scheduled Date/Time	Not Used
37	4	NM	O	01028	Number of Sample Containers	Not Used
38	60	CE	O	01029	Transport Logistics of Collected Sample	Not Used
39	200	CE	O	01030	Collector's Comment	Not Used
40	60	CE	O	01031	Transport Arrangement Responsibility	Not Used
41	30	ID	O	01032	Transport Arranged	Not Used
42	1	ID	O	01033	Escort Required	Not Used
43	200	CE	O	01034	Planned Patient Transport Comment	Not Used
44	80	CE	O	00393	Procedure Code	Not Used
45	80	CE	O	01316	Procedure Code Modifier	Not Used

[1]This field will store the Registry or custom form node name, like, "ACC 4.0 Forms" or "NASPE Forms" etc.

[2]This field will store the Registry or custom form node GUID.

[3]This field will store the Registry form node's version, which is in the format major.minor. For example, “4.0000” or “5.0012”. The minor version will have a precision of 4 points.

[4]This field will store the Registry form node's comments, like, “This is version 4.0 release for ACC” or “This is version 4.2 release for ACC”.

Example OBR Segment:

OBR|1||e7c61043-6f7a-11d6-904f-009027f688a1_68909|&-1^Patient Demographics^^35400^Angioscopy^ANGIO|||20020524203534|20020524204336|||||||||M2421||||||CTH|F|||||||4777^Stramblow^Bruce^L^M.D.|||||||||||

Observation Result Segment (OBX)

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a clinical observation or report. The following table describes the OBX attributes:

SEQ	LEN	DT	GEHC Required Field	ITEM#	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	00569	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	00570	Value Type	always "ST"
3	200	CE	R	00571	Observation Identifier	See Mac-Lab/CardioLab Observation ID Tables
4	20	ST	C	00572	Observation Sub-ID	Not Used
5	65536[1]	*	C	00573	Observation Value	Set as the observed result or reporting structure[2]
6	60	CE	O	00574	Units	Set as the appropriate unit under which OBX.5 was measured.
7	60	ST	O	00575	References Range	Not Used
8	5	ID	O	00576	Abnormal Flags	Not Used
9	5	NM	O	00577	Probability	Not Used
10	2	ID	O	00578	Nature of Abnormal Test	Not Used
11	1	ID	R	00579	Observation Result Status	"F" [3]
12	26	TS	O	00580	Date Last Obs Normal Values	Not Used
13	20	ST	O	00581	User Defined Access Checks	Not Used
14	26	TS	R	00582	Date/Time of the Observation	Date and Time formatted as YYYYMMDDHHMMSS
15	60	CE	O	00583	Producer's ID	Not Used
16	80	XCN	O	00584	Responsible Observer	Not Used
17	60	CE	O	00936	Observation Method	Not Used

[1]The length of the observation value field is variable, depending upon value type. See OBX-2-value type.

[2]Reporting structures are multi-component observations using component separators in a defined way. See Reporting Structures later in this document.

[3]OBX.11 Observation Result Status: This flag shall be used to signify what action the processing status of this OBX record. Specifically, whether this record is complete ("F" for Final), is an edit/correction of an existing record ("C" for Correction), or if this record should be deleted ("D" for Delete) and removed from the receiving system. The default value shall be "F". This should be considered as future GE Healthcare functionality that does not yet exist in the feeder/creation system, but that should be planned/designed for in future receiving systems.

Example OBX Segment:

OBX|2|ST|PT-WT-KG||49.00|Kg|||||F|||20020524203534||||

Common Order Segment (ORC)

The ORC segment is used to transmit information common to all orders. Each case from a Mac-Lab/CardioLab study will be treated as a separate order. The following table describes the ORC attributes:

SEQ	LEN	DT	GEHC Required Field	ITEM#	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	2	ID	R	00215	Order Control	Always "RE"
2	22	EI	C	00216	Placer Order Number	Not Used
3	80	EI	C	00217	Filler Order Number	Study.StudyUID_CaseDP
4	22	EI	O	00218	Placer Group Number	Not Used
5	2	ID	O	00219	Order Status	Not Used
6	1	ID	O	00220	Response Flag	Not Used
7.1	32	CQ	O	00221	Quantity	Not Used
7.2	32	CM	O	00221	Interval	Not Used
7.3	32	ST	O	00221	Duration	Not Used
7.4	26	TS	O	00221	Start Time	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
7.5	26	TS	O	00221	Stop Time	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
8	200	CM	O	00222	Parent	Not Used
9	26	TS	O	00223	Date/Time of Transaction	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
10	120	XCN	O	00224	Entered By	Not Used
11	120	XCN	O	00225	Verified By	Not Used
12	120	XCN	O	00226	Ordering Provider	|EventStaff.SSN_ID^EventStaff.LastName^EventStaff.FirstName^EventStaff.MiddleName^^^^EventStaff.StaffID| where this is the primary physician.
13	80	PL	O	00227	Enterer's Location	Not Used
14	40	XTN	O	00228	Call Back Phone Number	Not Used
15	26	TS	O	00229	Order Effective Date/ Time	Not Used
16	200	CE	O	00230	Order Control Code Reason	Case Type
17	60	CE	O	00231	Entering Organization	Not Used
18	60	CE	O	00232	Entering Device	Not Used
19	120	XCN	O	00233	Action By	Not Used

Example ORC Segment:

ORC|RE||e7c61043-6f7a-11d6-904f-009027f688a1_68909||||^^^20020524203534^20020524215534||20020524203534|||321444777^Stramblow^Bruce^L^^^^3214455||||diagnostic cath||||

Sequencing Rules

- The OBR shall serve as the header segment for a particular observation set or phase.
- Individual OBX segments shall serve as a single observation, observation fragment or a reporting structure for similar groupings of observations (e.g. pressure measurement).
- The OBX represents the smallest indivisible unit of a case report. For the purposes of the GE Healthcare Mac-Lab/CardioLab data export, the OBR segment shall represent the separate phases (GE Healthcare customers may use the term ‘condition’).
- Examples of customer-named phases might include:
  - Baseline
  - Room Air
  - 100% O2
  - PTCA
  - Intervention
- Phases may be iterative. Each OBX segment, which is subordinate to an OBR, will represent the clinical events that occurred under and during that particular phase.
- OBX’s shall represent the events such as vital signs, administered drugs, pressures, valve information, supplies, etc. that occurred while in that protocol.
- Within a phase, events (OBX’s) shall be in chronological order.

NOTE: Phase naming conventions are user-defined within the Mac-Lab/CardioLab application. Coordination may be necessary between GE Healthcare customer/clinical support and the client to standardize their phase names and the conditions for their site’s use as much as possible. This will ensure best alignment of the client’s data.

Segments Hierarchy

An example hierarchy of segments that creates a pseudo HL7 message follows:

NOTE: The OBR sequence numbers may change in the actual export, depending on:

- Number of registry form nodes available in the study
- Number of phases available
- Number of case type available, etc.

MSH – Identifies this message as unique

PID – Uniquely identifies the patient

OBR “1” – Introduces atomic clinical events which fall under the “Patient Demographics” phase

OBX “1” – PT-HT-CM - 158 cm

OBX “2” – PT-WT-KG – 48 kg

OBX “3” – PT-BSA – 1.6 meters squared

OBX “4” – PT-SEX - M

OBX “5” – PT-AGE – 72 years

OBR “2”– Introduces atomic clinical events which fall under the “Case Demographics” phase

OBX “1” – STUDYUID – 234c3-199288de5-91184ca-3a9023cf

OBX “2” – HOSPINFO-NAME – Great Medical Center

OBX “3” – TIME-CASETART - 20010307081524

OBX “4” – TIME-CASEEND – 20010307085618

OBX “5” – CVIS-MODE – 1

OBR “3” – Introduces atomic clinical events which fall under the “Event Log” phase

OBX “1” – EVENT - Pt. prepped and draped in usual manner

OBX “2” – EVENT - Pt. informed consent signed

OBR “4” – Introduces atomic clinical events which fall under the “Conscious Sedation” phase

OBX “1” – CS-ACT-PRE -

OBR “5” – Introduces atomic clinical events which fall under the “Xray Summary” phase

OBX “1” – XRAY-FLTIME – 12 min

OBX “2” – XRAY-FLDOSE - 150 cc

OBR “6” – Introduces atomic clinical events which fall under the “DICOM” phase

OBX “1” – DICOM-MWLINFO

OBX “2” – DICOM-RUN

OBX “3” – DICOM-RUN

OBR “7” – Introduces atomic clinical events which fall under the “Reports” phase

OBX “1” – <report1 title> - <report1 name>

OBX “2” – <report2 title> - <report2 name>

OBR “8” – Introduces atomic clinical events which fall under the “Custom Fields” phase

OBX “1” – Custom Field 1

OBX “2” – Custom Field 2

OBR “9” – Introduces atomic clinical events which fall under the “Registry_Fields” phase

OBX “1” – *Admission Status

OBX “2” – Date of Labworks

OBR “10” – Introduces atomic file attachment events which fall under the “Attachments” phase

OBX “1” – <file info 1>

OBX “2” – <file info 2>

ORC – Diagnostic Cath

OBR “11” – Introduces atomic clinical events which fall under the “Baseline” phase

OBX “1” – Event_Vitals

OBX “2” – Event_Medication

OBX “3” – Event_Inventory

OBX “4” – Event_Procedure – Left Heart Cath

OBX “5” – Event_Personnel – 2633^SMITH^JOHN^WILEY^MD^FELLOW^20010307081722^

OBX “6” – Event_O2SAT – PV^0^96^14.5^^70

OBX “7” – HEMOMEAS_GENERAL - PVR/SVR Ratio^0^2.7^

OBX “8” – Event_COMPLICATION – Tamponade

OBR “12” – Introduces atomic clinical events which fall under the “100% O2” phase

OBX “1” – Event_Vitals -

OBX “2” – Event_Medication -

OBX “3” – Event_Inventory -

OBX “4” – Event_Procedure – AngioGram

OBX “5” – Event_O2SAT – RA^0^97^14.5^^68

OBX “7” – HEMOMEAS_PRESSURE - AO^1^175^mmHg^72^mmHg^110^mmHg^68^BPM

OBX “8” – EVENT_COMPLICATION – CHF

ORC – Interventional Cath

OBR “13” – Introduces atomic clinical events which fall under the “Baseline” phase

OBX “1” – Event_Vitals

OBX “2” – Event_Medication

OBX “3” – Event_Inventory

OBX “4” – Event_Procedure – Left Heart Cath

OBX “5” – Event_Personnel – 2633^SMITH^JOHN^WILEY^MD^FELLOW^20010307081722^

OBX “6” – Event_O2SAT – PV^0^96^14.5^^70

OBX “7” – HEMOMEAS_GENERAL - PVR/SVR Ratio^0^2.7^

OBX “8” – Event_COMPLICATION – Tamponade

OBX “9” – Event_Intervention_Lesion

OBX “10” – Event_Intervention_Treatment

OBX “11” – Event_Intervention_Supply

OBX “12” – Event_Intervention_Attempt – Attempt 1

OBX “13” – Event_Intervention_Attempt – Attempt 2

OBX “14” – Event_Intervention_Attempt – Attempt 3

OBR “14” – Introduces atomic clinical events which fall under the “100% O2” phase

OBX “1” – Event_Vitals -

OBX “2” – Event_Medication -

OBX “3” – Event_Inventory -

OBX “4” – Event_Procedure – AngioGram

OBX “5” – Event_O2SAT – RA^0^97^14.5^^68

OBX “7” – HEMOMEAS_PRESSURE -AO^1^175^mmHg^72^mmHg^110^mmHg^68^BPM

OBX “8” – EVENT_COMPLICATION – CHF

Mac-Lab/CardioLab Observation Identifier Tables

Static OBR Groupings

Aside from the OBR groupings of OBX segments that are protocol-based, there are special, one-time occurring OBR groups in each message. These OBR groupings will each occur exactly once per HL7 message (file) in this prescribed order. The special, static OBR segments will not value subcomponent Event Phase Number.

Patient Demographics OBX Segments (“Patient Demographics”)

OBSERVATION IDENTIFIER	DESCRIPTION	UNITS	MAC-LAB/CARDIOLAB FIELD
PT-HT-CM	Patient Height in centimeters	cm (centimeter)	DemographicResults.value where indexNum = 1
PT-WT-KG	Patient Weight in kilograms	kg (kilogram)	DemographicResults.value where indexNum = 2
PT-BSA	Patient Body Surface Area	m2 (meter2)	DemographicResults.value where indexNum = 3
PT-SEX	Patient Sex	none	DemographicResults.value where indexNum = 5 (“M”, “F”, or “U”)
PT-AGE	Patient's Age at time of study	SystemUnitType value	DemographicResults.value where indexNum = 4

Example OBX Segment:

OBX|2|ST|PT-WT-KG||49.00|Kg|||||F|||20020524203534||||

Case Demographics OBX Segments (“Case Demographics”)

Includes Event_CB_Note + several Non-events.

OBSERVATION IDENTIFIER	DESCRIPTION	UNITS	MAC-LAB/CARDIOLAB FIELD
STUDYUID	Globally unique identifier for a study	none	Study.StudyUID (a GUID)
HOSPINFO-NAME	Hospital Name	none	HospitalInfo.Name
HOSPINFO-LOC	Hospital Location	none	HospitalInfo.Location
HOSPINFO-ADDR	Hospital Address	none	HospitalInfo.Address
HOSPINFO-CITY	Hospital City	none	HospitalInfo.City
HOSPINFO-ST	Hospital State or Province	none	HospitalInfo.State
HOSPINFO-ZIP	Hospital Zip	none	HospitalInfo.Zipcode
HOSPINFO-CNTRY	Hospital Country	none	Country.Abbrev (ISO 2-character abbreviation)
TIME-CASESTART	Time Case Starts	YYYYMMDDHHMM	Study.StartTime
TIME-CASEEND	Time Case Ends	YYYYMMDDHHMM	EventBlock1.EventComment when EventTypeID = Event_CB_Note (0x0601) and string = "CASE END"
TIME-PTARRIVES	Time Patient Arrives	YYYYMMDDHHMM	EventBlock1.EventComment when EventTypeID = Event_CB_Note (0x0601) and string = "PATIENT ARRIVES"
TIME-PTONTABLE	Time Patient on Table	YYYYMMDDHHMM	EventBlock1.EventComment when EventTypeID = Event_CB_Note (0x0601) and string = "PATIENT ON TABLE"
TIME-PTSENTTO	Time Patient Sent To	YYYYMMDDHHMM	EventBlock1.EventComment when EventTypeID = Event_CB_Note (0x0601) and string = "PATIENT TRANSFERRED TO"
TIME-MDCALLED	Time Physician Called	YYYYMMDDHHMM	EventBlock1.EventComment when EventTypeID = Event_CB_Note (0x0601) and string = "PHYSICIAN CALLED"
TIME-MDARRIVE	Time Physician Arrived	YYYYMMDDHHMM	EventBlock1.EventComment when EventTypeID = Event_CB_Note (0x0601) and string = "PHYSICIAN ARRIVED"
STUDYBINLOC	UNC Path to the study binary data files	none	OnlineStudyPath using UNC notation
STUDYNUM	Study Number	None	Study.STUDYNUMBER
CVIS-MODE	Event list Ids are CVIS generated	1 = CVIS Mode 0 = No CVIS Mode	CVIS option

Example OBX Segment:

OBX|9|ST| TIME-PTARRIVES |||||||F|||20020524203534||||

Event Log Events OBX Segments (“Event Log”)

OBSERVATION IDENTIFIER	DESCRIPTION	UNITS	MAC-LAB/CARDIOLAB FIELD
EVENT	Event Log Window Event	none	EventBlock1.Summary when EventBlock1.IncludeInReport = True. Insert EventBlock1.EventTime in OBX.14 (Observation DT/TM)

Example OBX Segment:

OBX|3|ST|EVENT||Procedure: Left Heart Cath|||||F|||20020524204140||||

Conscious Sedation OBX Segments (“Conscious Sedation”)

OBSERVATION IDENTIFIER	DESCRIPTION	UNITS	MAC-LAB/CARDIOLAB FIELD
CS-ACT-PRE	Activity - Precase		ActivityList.Activity resolved from ConsciousSedation.ActivityID where ConsciousSedation.PrePost = 1
CS-ACT-POST	Activity - Postcase		ActivityList.Activity resolved from ConsciousSedation.ActivityID where ConsciousSedation.PrePost = 0
CS-RESP-PRE	Respiration - Precase		RespirationList.Respiration resolved from ConsciousSedation.RespirationID where ConsciousSedation.PrePost = 1
CS-RESP-POST	Respiration - Postcase		RespirationList.Respiration resolved from ConsciousSedation.RespirationID where ConsciousSedation.PrePost = 0
CS-CIRC-PRE	Circulation - Precase		CirculationList.Circulation resolved from ConsciousSedation.CirculationID where ConsciousSedation.PrePost = 1
CS-CIRC-POST	Circulation - Postcase		CirculationList.Circulation resolved from ConsciousSedation.CirculationID where ConsciousSedation.PrePost = 0
CS-CONS-PRE	Consciousness - Precase		ConsciousnessList.Consciousness resolved from ConsciousSedation.ConsciousnessID where ConsciousSedation.PrePost = 1
CS-CONS-POST	Consciousness - Postcase		ConsciousnessList.Consciousness resolved from ConsciousSedation.ConsciousnessID where ConsciousSedation.PrePost = 0
CS-O2SAT-PRE	O2 Saturation - Precase		O2SaturationList.O2Saturation resolved from ConsciousSedation.O2SaturationType where ConsciousSedation.PrePost = 1
CS-O2SAT-POST	O2 Saturation - Postcase		O2SaturationList.O2Saturation resolved from ConsciousSedation.O2SaturationType where ConsciousSedation.PrePost = 0
CS-SCORE-PRE	Score - Precase		ConsciousSedation.Score where ConsciousSedation.PrePost = 1

OBSERVATION IDENTIFIER	DESCRIPTION	UNITS	MAC-LAB/CARDIOLAB FIELD
CS-SCORE-POST	Score - Postcase		ConsciousSedation.Score where ConsciousSedation.PrePost = 0
CS-COMMENT-PRE	Comment - Precase		EventBlock1.EventComment where ConsciousSedation.PrePost = 1
CS-COMMENT-POST	Comment - Postcase		EventBlock1.EventComment where ConsciousSedation.PrePost = 0

Example OBX Segment:

OBX|11|ST|CS-SCORE-PRE||9|||||F|||20011003144143||||

Xray Summary OBX Segments (“Xray Summary”)

OBSERVATION IDENTIFIER	DESCRIPTION	UNITS	MAC-LAB/CARDIOLAB FIELD
XRAY-FLTIME	Fluoro Time	min (minutes)	XraySummary.FluoroTime (formatted as "x.x")
XRAY-FLDOSE	Fluoro Dose	$cGycm^2$	XraySummary.FluoroDose
XRAY-CINEDOSE	Cine Dose	$cGycm^2$	XraySummary.CineDose
XRAY-TOTDOSE	Total Dose	$cGycm^2$	XraySummary.TotalDose
XRAY- CINEFRAME	Cine Frames	none	XraySummary.CineFrames
XRAY- TOTALRUNS	Total Runs	none	XraySummary.TotalRuns
XRAY- CDID	CD ID	none	XraySummary.CDID
XRAY- CINEID	Cine ID	none	XraySummary.CineID
XRAY- ARCHIVEID	Archive ID	none	XraySummary.ArchiveID
XRAY- INTFLTIME	Interventional Total Fluoro Time	none	XraySummary.intvfluorotime
XRAY- DIAGFLTIME	Diagnostic Total Fluoro Time	none	XraySummary. diagfluorotime

Example OBX Segment:

OBX|1|ST|XRAY-FLTIME||10.00|min|||||F|||20011003144143||||

Event_DICOM_RunInfo OBX (Reporting Structure)

One OBX created for each run.

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_DICOM_RunInfo"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	5	ST	O	Run Number	RunInfo.RunNumber (smallint)
5.2	26	ST	O	Run Time	RunInfo RunTime formatted as HHMMSS
5.3	5	ST	O	Number of Frames	RunInfo NumberFrames (smallint)
5.4	8	ST	O	Frames per Second	RunInfo FramesPerSecond (float)
5.5	5	ST	O	Plane	RunInfo Plane (smallint)
5.6	8	ST	O	kV	RunInfo kV (float)
5.7	10	ST	O	mA	RunInfo mA (int)
5.8	10	ST	O	Mas	RunInfo Mas (int)
5.9	10	ST	O	mS	RunInfo ms (int)
5.10	5	ST	O	Angulation	RunInfo Angulation (smallint)
5.11	5	ST	O	Rotation	RunInfo Rotation (smallint)
5.12	5	ST	O	Focal Distance	RunInfo FocalDistance (smallint)
5.13	5	ST	O	Image Intensifier Mode	RunInfo ImageIntensifierMode (smallint)
5.14	64	ST	O	Sequence Name	RunInfo SequenceName
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Study.StartTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example OBX Segment:

OBX|8|ST| Event_DICOM_RunInfo ||1^102302^112^32.24^1^24.6^35^42^67^12^24^6^8^Run number 1||||||F|||20011003144143||||

DICOM Other Information OBX

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_DICOM_Study"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	64	ST	O	Study Instance UID	Study.DICOMStudyInstanceUID
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example OBX Segment:

OBX|8|ST| Event_DICOM_Study ||1.2.42567.56798||||||F|||20011003144143||||

Reports OBX Segments (“Reports”)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "REPORTS"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	64	ST	O	Report Name	ReportInfo.filename
5.2	64	ST	O	Report Title	ReportInfo.description
5.3	64	ST	O	Report Time	ReportInfo.datecreated
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Study.StartTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example OBX Segment:

OBX|12|ST| REPORTS || 5e9807dd-746b-43a7-91ee-fb4bc52ade2940565.8994212963_20972767375757098.doc^EP^20011003144400||||||F|||20011003144143||||

Custom Fields OBX Segment (“Custom Fields”)

One/more OBX per custom field.

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Custom_Field^FieldID^Field_Name where Custom_Field is static text always the same FieldID = CustFormStudyData.labelno (GUID) Field_Name = CustFormStudyData.labelname
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	3000	ST	O	Field Value	CustFormStudyData.valuetext
5.2	36	ST	O	Field Group ID	CustForm.Formno (GUID)
5.3	64	ST	O	Field Group	CustFormStudyData.formname
5.4	3	ST	O	Value ID	CustFormStudyData.Valueid (tinyint) Will be non-zero for selection based fields only
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Study.StartTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

If the custom field contains a date value it will be of the format YYYYMMDD and a time value will be of format HHMMSS.

Example OBX Segment:

OBX|1|ST|Custom_Field^f2c30aa2-5ae8-11d7-9068-0010f3030333^Room Number ||243^ E5B36BAC-CA33-47D4-B407-9D43161C8888^Additional Information ||||||F|||20011003144143||||

Attachment OBX Segments (“Attachments”)

The Attachments OBR shall be available in the EP and Cath HL7 export. The Attachments segment shall be the last singleton segment in the HL7 export. The OBX shall contain the information about the file that is exported along with the study. Number of OBXs under the singleton OBR will depend on the number of files exported with the study. The SEQ 5.4 Title shall contain the title of images (Single frame & multi-frame) and report documents.

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID – OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always “ST”
3	200	CE	R	Observation Identifier	Always “ATTACHMENT”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or file information
5.1	64	ST	O	File Name	FileInfo.filename
5.2	64	ST	O	File Creation Time	Not Used
5.3	10	NM	C	File Size	FileInfo.filesize in bytes
5.4	64	ST	C	Title	ReportInfo.Description or Image.Title or Snapshot.Title
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	“F” always
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Date and Time of Data Export
15	60	CE	O	Producer’s ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

A date value it will be of the format YYYYMMDD and a time value will be of format HHMMSS.

Example OBX Segment:

OBX|1|ST|ATTACHMENT||2788209c-8c2d-41eb-9542-99375e1486fa38765.5265277778_10485777429162860.doc^^3824128^Images||||||F|||20110318114020||||

OBX|2|ST|ATTACHMENT||2788209c-8c2d-41eb-9542-99375e1486faImage0001.AVI^^500224^Imported Image Loop 1||||||F|||20110318114020||||

OBX|3|ST|ATTACHMENT||2788209c-8c2d-41eb-9542-99375e1486faImage0002.wmv^^485972^Image Loop 1||||||F|||20110318114020||||

Dynamic OBR Groupings

These are the OBR, which will be available in the HL7 if the registry forms are present on the system. If no registry forms are present on the system, then the HL7 export will not have these OBRs. Multiple OBR for registry forms based will be on Number of registry form nodes available in the system.

Number of OBXs in each OBR will depend on the number of registry fields used in the study

Registry Fields OBX Segments

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Registry_Field^FieldID^Field_name where Registry_Field is static text always the same FieldID = CUSTFormStudydata.labelno (GUID) Field_name = CUSTFormStudydata.labelname
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	O	Field Value	CUSTFormStudydata.valuetext
5.2	36	ST	O	Field Group ID	CUSTForms.Formno
5.3	64	ST	O	Field Group (See Field Group Tables)	CUSTForms.formname
5.4	3	ST	O	Value ID	CUSTFormStudydata.Valueid (tinyint) Will be non-zero for selection based fields only
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Study.StartTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

If the registry field contains a date value it will be of the format YYYYMMDD and a time value will be of format HHMMSS.

Example OBX Segment:

OBX|1|ST|Registry_Field^55716D66-CB65-41C8-BC95-671C427CA473^*Admission Status:||Outpatient Referal ^ E5B36BAC-CA33-47D4-B407-9D43161C7777^Admission^3||||||F|||20011003144143||||

Data Tables - Common / Raw Events Reporting Structures

These are the administrative observations and raw clinical values that are captured during the course of a study. During any hemodynamic phase, a number of similar measurements can be made (for example, multiple LV measurements). Generally, only one of these events is used to compute hemodynamic analysis for that phase. The user, in order to synchronize for inclusion in the study report, can select those events being reported here. A select, unique, phase-based subset of these raw clinical events is reported in the Hemodynamic Measurement structures later in this document. The values included in those Hemodynamic Measurement structures are synchronized with other values in that section (e.g. a particular cardiac output reported in the General Structure is the same one used in the Valve Pressure Structure irrespective of the raw multiple cardiac outputs recorded in a hemodynamic phase) for clinical significance. The raw Event-based clinical observations & measurements reported in this section should not be used for hemodynamic analysis.

Event_Medication OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Medication"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	R	Medication Description	EventMedication.Medication
5.2	8	ST	R	Medication Amount	EventMedication.Amount (real, TJC (JCAHO) formatted)
5.3	32	ST	R	Medication Route	MedicationRoute.Name resolved from EventMedication.MedicationRouteType
5.4	26	ST	O	Medication Stop Time	EventMedication.StopTime formatted as YYYYMMDDHHMMSS
5.5	128	ST	O	Medication ACC Code Type	EventMedication.ACCCodeType
5.6	32	ST	O	Medication Billing Code	MedicationSummary.BillingCode
5.7	10	ST	O	DMS ID	EventMedication.medicationID (int)
5.8	10	ST	O	Medications Datapoint	EventMedication.eventdatapoint (int)
5.9	10	ST	O	Ordered by Staff DMS ID	EventStaff.staffID

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
5.10	10	ST	O	Ordered by Staff Datapoint	EventStaff.eventdatapoint
5.11	10	ST	O	Given by Staff DMS ID	EventStaff.staffID
5.12	10	ST	O	Given by Staff Datapoint	EventStaff.eventdatapoint
6	60	CE	R	Units	SystemUnit.Name resolved from EventMedication.SystemUnitType
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Medication Administration or Start Time)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

* Medication Stop Time. If the medication being administered is a drip, the Start Time shall be denoted using OBX.14 and Stop Time shall be denoted using OBX.5.4. For a single point-in-time dose (like Valium - IM), the Medication Stop Time shall be null.

Example Medications OBX:

OBX|14|ST|Event_Medication||Ibuprofen^800^PO^^OTHER^389912^222^12322^100^1^121^2|mg|||||F|||20010307082033||||

NOTE: Medication amounts are formatted per TJC (JCAHO):

- Trailing zeros will not be included.
- A leading zero before the decimal point will be included.

Event_Inventory OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Inventory"

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	R	Inventory Item Description	EventSupply.SupplyName
5.2	32	ST	O	Inventory Item Part Number	EventSupply.PartNum
5.3	32	ST	O	Inventory Item Size	EventSupply.Size
5.4	32	ST	O	Inventory Manufacturer	EventSupply.Manufacturer
5.5	64	ST	O	Inventory Item Serial Number	EventSupply.SerialNum
5.6	64	ST	O	Inventory Item Lot Number	EventSupply.LotNum
5.7	64	ST	O	Inventory Barcode	EventSupply.Barcode
5.8	128	ST	O	Inventory Folder (Category)	EventSupply.FolderName
5.9	10	ST	R	Inventory DataPoint	EventSupply.DataPoint (int)
5.10	32	ST	O	Inventory APC/Billing Code	EventSupply.APCCode
5.11	10	ST	O	DMS ID	EventSupply.SupplyID (int)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Inventory Consumption)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Inventory OBX:

OBX|23|ST|Event_Inventory||Quantum Ranger^14790-35^7FR^Cordis^SN111^LN222^+H74914790351M^Balloons^58772^APC488812^333||||||F|||20010307082453||||

Event_Complication OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Complication"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	O	Complication description	EventComplication.ComplicationName
5.2	10	ST	O	DMS ID	EventComplication.Complicationid (int)
5.3	10	ST	O	Complication datapoint	EventComplication. Eventdatapoint (int)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Complication)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Complication OBX:

OBX|72|ST|Event_Complication||Tamponade^333^12322|||||F|||20010307083418||||

Event_Procedure OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Procedure"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	O	Procedure Description	EventProcedure.Procedure
5.2	128	ST	O	Procedure Code 1	EventProcedure.CPTCode
5.3	128	ST	O	Procedure Code 2	EventProcedure.Code1
5.4	128	ST	O	Procedure Code 3	EventProcedure.Code2
5.5	128	ST	O	Procedure Code 4	EventProcedure.Code3
5.6	10	ST	O	DMS ID	EventProcedure.procedureid (int)
5.7	10	ST	O	Procedure Datapoint	EventProcedure.eventdatapoint (int)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Procedure)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Procedure OBX:

OBX|45|ST|Event_Procedure||Left Heart Cath^CPT9322105^111^222^334^333^12322||||||F|||20010307082141||||

Event_Personnel OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Personnel"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	24	ST	O	Personnel ID	EventStaff.SSN_ID
5.2	32	ST	O	Personnel Last Name	EventStaff.LastName
5.3	32	ST	O	Personnel First Name	EventStaff.FirstName
5.4	16	ST	O	Personnel Middle Name	EventStaff.MiddleName
5.5	32	ST	O	Personnel Title	StaffTitle.Name resolved from EventStaff.Title
5.6	32	ST	O	Personnel Duty	StaffDuty.Name resolved from EventStaff.StaffDuty
5.7	26	ST	O	Personnel Time In	EventBlock1.EventTime (formatted as YYYYMMDDHHMMSS)
5.8	26	ST	O	Personnel Time Out	EventStaff.TimeOut (formatted as YYYYMMDDHHMMSS)
5.9	10	ST	O	DMS ID	EventStaff.staffed (int)
5.10	10	ST	O	Staff datapoint	EventStaff.eventdatapoint (int)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Personnel Start Time)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Personnel OBX:

OBX|9|ST|Event_Personnel||2354^SMITH JOHN W^MD^FELLOW^20010307081541^20010307085141^333^12322||| |||F|||20010307082141||||

Event_Contrast OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Contrast"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	O	Contrast Description	EventContrast.ContrastName
5.2	8	ST	O	Contrast Amount	EventContrast.Amount (real, TJC (JCAHO) formatted)
5.3	10	ST	O	DMS ID	EventContrast.Contrastid (int)
5.4	10	ST	O	Contrast Datapoint	EventContrast.eventdatapoint (int)
6	60	CE	O	Units	Always "ml"
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Contrast Administration Time)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Contrast OBX:

OBX|22|ST|Event_Contrast||Omnipaque^85^333^12322|cc|||||F|||20010307082141||||

NOTE: Medication amounts are formatted per TJC (JCAHO):

- Trailing zeros will not be included.
- A leading zero before the decimal point will be included.

Event_Intervention OBXs

There are several OBX types tied to an Intervention: Lesion, Treatment, Attempt, Intervention Supply and Graft. Each Treatment OBX will also include information about the Lesion to which the treatment is being applied. Each Attempt OBX will include information about the treatment to which the attempt is being made and the lesion to which the treatment is being applied. Each Intervention Supply OBX will include information about the treatment and lesion with which the supply is being used.

Lesion OBX

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Intervention_Lesion"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	32	ST	O	Segment Name/Lesion Location	INTRVlesion.SegmentID resolve for ACC NCDR string name from VesselSegment.SegmentName
5.3	5	ST	O	Lesion Number	INTRVlesion.LesionID (smallint)
5.4	16	ST	O	Lesion Type	INTRVlesion.intrvtype resolved for string name
5.5	3	ST	O	Initial Stenosis	INTRVlesion.inistenosis
5.6	3	ST	O	Residual Stenosis	INTRVlesion.resistenosis
5.7	70	ST	O	Pre TIMI flow	INTRVlesion.pretimiflow resolved for string name
5.8	70	ST	O	Post TIMI flow	INTRVlesion.posttimiflow resolved for string name
5.9	32	ST	O	Previous Dilated Lesion	INTRVlesion.prevdilatedlesion resolved for string name
5.10	50	ST	O	In graft to Cited Segment	INTRVlesion.basicsegtype resolved for string name
5.11	40	ST	O	Location in graft	INTRVlesion.locid resolved for string name
5.12	32	ST	O	Lesion Risk	INTRVlesion.lesionrisk resolved for string name
5.13	16	ST	O	Dissection in segment	INTRVlesion.dissectinseg resolved for string name
5.14	16	ST	O	Acute closure	INTRVlesion.acuteclosure resolved for string name
5.15	16	ST	O	Successful reopening	INTRVlesion.succreopen resolved for string name
5.16	16	ST	O	Perforation	INTRVlesion.perforation resolved for string name
5.17	32	ST	O	Graft Type	INTRVgraft.grafttype resolved for string name
5.18	32	ST	O	Graft Target Segment	INTRVlesion.segmented resolved for string name
5.19	32	ST	O	Graft Origin	INTRVgraft.orig resolved for string name

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
5.20	32	ST	O	Graft Destination	INTRVgraft.dest resolved for string name
5.21	32	ST	O	Guidewire Success	INTRVlesion.guidewire resolved for string name
5.22	40	ST	O	Peripheral Group	INTRVlesion.INTRVPeripheralGroup
5.23	5	ST	O	Segment Name/Lesion Location ID	INTRVlesion.SegmentID
5.24	5	ST	O	Lesion Type ID	INTRVlesion.intrvtype
5.25	5	ST	O	Pre TIMI flow ID	INTRVlesion.pretimiflow
5.26	5	ST	O	Post TIMI flow ID	INTRVlesion.posttimiflow
5.27	5	ST	O	Previous Dilated Lesion ID	INTRVlesion.prevdilatedlesion
5.28	5	ST	O	In graft to Cited Segment ID	INTRVlesion.basicsegtype
5.29	5	ST	O	Location in graft ID	INTRVlesion.locid
5.30	5	ST	O	Lesion Risk ID	INTRVlesion.lesionrisk
5.31	5	ST	O	Dissection in segment ID	INTRVlesion.dissectinseg
5.32	5	ST	O	Acute closure ID	INTRVlesion.acuteclosure
5.33	5	ST	O	Successful reopening ID	INTRVlesion.succreopen
5.34	5	ST	O	Perforation ID	INTRVlesion.perforation
5.35	5	ST	O	Graft Type ID	INTRVgraft.grafttype
5.36	5	ST	O	Graft Target Segment ID	INTRVlesion.segmented
5.37	5	ST	O	Graft Origin ID	INTRVgraft.orig
5.38	5	ST	O	Graft Destination ID	INTRVgraft.dest
5.39	5	ST	O	Guidewire Success ID	INTRVlesion.guidewire
5.40	5	ST	O	Peripheral Group ID	INTRVlesion.INTRVPeripheralGroup
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Intervention Lesion OBX:

OBX|27|ST| Event_Intervention_Lesion ||1^pCirc^2^Coronary^75^10^26^11^Balloon^No^No Graft^Low Risk^No^No^Not Applicable^No^^^^^Successful^^2^1^1^1^1^1^0^2^0^0^0^0^0^0^0^0^2^0||||||F|||20010307082141||||

Treatment OBX

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Intervention_Treatment"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	5	ST	O	Lesion Number	INTRVlesion.LesionID (smallint)
5.3	5	ST	O	Treatment Number	INTRVtreatment.treatmentid (smallint)
5.4	32	ST	O	Treatment Type	INTRVtreatment.treatmenttypeid resolved for string name
5.5	16	ST	O	Primary Indication	INTRVtreatment.primsec resolved for string name
5.6	16	ST	O	Success Indication	INTRVtreatment.sucfail resolved for string name
5.7	16	ST	O	Treatment Type ID	INTRVtreatment.treatmenttypeid
5.8	16	ST	O	Primary Indication ID	INTRVtreatment.primsec
5.9	16	ST	O	Success Indication ID	INTRVtreatment.sucfail
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Intervention Treatment OBX:

OBX|27|ST| Event_Intervention_Treatment
||1^2^1^Balloon^Yes^Yes^1^1^1||||||F|||20010307082141||||

Attempt OBX

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Intervention_Attempt"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	5	ST	O	Lesion Number	INTRVlesion.LesionID (smallint)
5.3	5	ST	O	Treatment Number	INTRVtreatment.treatmentid (smallint)
5.4	5	ST	O	Attempt Number	EVENTINTRVattempt.attemptid (smallint)
5.5	5	ST	O	Duration in Seconds	EVENTINTRVattempt.Duration (smallint)
5.6	8	ST	O	Attribute1	EVENTINTRVattempt.Attemptattr1 (real)
5.7	8	ST	O	Attribute2	EVENTINTRVattempt.Attemptattr2 (real)
5.8	8	ST	O	Attribute3	EVENTINTRVattempt.Attemptattr3 (real)
5.9	8	ST	O	Attribute4	EVENTINTRVattempt.Attemptattr4 (real)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Intervention Attempt OBX:

OBX|27|ST| Event_Intervention_ Attempt
||1^2^1^1^50^6.00^0.00^0.00^0.00||||||F|||20010307082141|||

The attribute fields above depend upon the treatment as described in the following table.

Treatment Attribute Table

Treatment	Attribute 1	Attribute 2	Attribute 3	Attribute 4
Balloon	Pressure in Atm			
Cutting Balloon	Pressure in Atm			
Bare Metal Stent	Pressure in Atm			
DCA	Pressure in Atm	Cuts		
Rotational Atherectomy	Speed in Rpm	Passes	Burr size	
Atherectomy	Speed in Rpm	Passes	Burr size	
AngioJet	Volume in	Volume out		
TEC	Volume out			
Thrombectomy	Volume out			
Laser	Passes			
IVUS				
Flowire				
Pressure Wire				
Sirolimus-Eluting Stent	Pressure in Atm			
Paclitaxel-Eluting Stent	Pressure in Atm			
Zotarolimus -Eluting Stent	Pressure in Atm			
Everolimus-Eluting Stent	Pressure in Atm			
Heparin Coated Stent	Pressure in Atm			
Covered Stent	Pressure in Atm			
Gamma Brachytherapy	Dwell time (sec)	Dose		
Beta Brachytherapy	Dwell time (sec)	Dose		
Distal Embolic Protection				
Embolic				
Other Device				

Lesion Supply OBX

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Intervention_Supply"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	5	ST	O	Lesion Number	INTRVlesion.LesionID (smallint)
5.3	5	ST	O	Treatment Number	INTRVtreatment.treatmentid (smallint)
5.4	10	ST	O	Supply Used	INTRVsupplyused.Supplyused (int)
5.5	32	ST	O	Supply Use (pre procedure or during procedure)	INTRVsupplyused.usage (tinyint) resolved to string
5.6	16	ST	O	Supply Use ID	INTRVsupplyused.usage (tinyint)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Intervention Supply OBX:

OBX|27|ST| Event_Intervention_ Supply ||1^2^1^63188^Pre^1||||||F|||20010307082141|||

Event_Vital OBX

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_Vitals"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	5	ST	O	SpO2	EventVital.SPO2 (smallint)
5.3	5	ST	O	Heart rate	EventVital.HR (smallint)
5.4	8	ST	O	Systolic Pressure	EventVital.SP (real)
5.5	8	ST	O	Diastolic Pressure	EventVital.DP (real)
5.6	8	ST	O	Mean Pressure	EventVital.Mean (real)
5.7	8	ST	O	Respiration Rate	EventVital.RR (real)
5.8	11	ST	O	Respiration Rate Units	Always "breaths/min"
5.9	8	ST	O	Temperature	EventVital.Temp (real)
5.10	3	ST	O	Temperature Units	Recorded as “cel” (degrees Celsius) if temperature exists
5.11	64	ST	O	Level of Consciousness	EventVital.Loc (smallint)
5.12	5	ST	O	Pressure Source	EventVital.VitalPressureResource (smallint)
5.13	8	ST	O	Inspired EtCO2	EventVital.inspiredC02
5.14	8	ST	O	Expired EtCO2	EventVital.expiredC02
5.15	10	ST	O	Vitals Datapoint	EventVital.eventdatapoint
5.16	4	ST	O	Inspired EtCO2 Unit	Units for inspired CO2, always "mmHg"
5.17	4	ST	O	Expired EtCO2 Unit	Units for expired CO2, always "mmHg"
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
14	26	TS	R	Date/Time of the Observation (Vital Signs Event Time)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Vital OBX:

OBX|14|ST|Event_Vitals||0^97^71^130^50^89^22^breaths/min^37.1^cel^2 - Fully Awake^10^12^112334||||||F|| |20010307082141||||

Data Tables - Cath Event Reporting Structures

Event_ThermoDilution_Cardiac_Output OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_TDCO"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	8	ST	O	Cardiac Output	EventThermalDilutionCO.CO (real)
5.3	8	ST	O	Units	L/min
5.4	8	ST	O	Catheter Size	EventThermalDilutionCO.CatherSize (tinyint)
5.5	16	ST	O	Catheter Type	EventThermalDilutionCO.CatherType (tinyint)
5.6	8	ST	O	Cal Factor	EventThermalDilutionCO.CalFactor (smallint)
5.7	8	ST	O	Volume	EventThermalDilutionCO.Volume (tinyint)
5.8	16	ST	O	Method	EventThermalDilutionCO.Method (tinyint)
5.9	8	ST	O	Blood Temperature	EventThermalDilutionCO.BloodTemp (real)
5.10	8	ST	O	Injected Temperature	EventThermalDilutionCO.InjectedTemp (real)
5.11	5	ST	O	Heart Rate	EventThermalDilutionCO.HR (smallint)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example TDCO OBX:

OBX|31|ST|Event_TDCO||0^4.70^L/ml^7 F^Edwards^580^10cc^Bath^30.20^21.30^76||||||F|||20010809122424||||

Event_Manual_Cardiac_Output OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_ManualCO"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	8	ST	O	Cardiac Output	EventManualCO.CO (real)
5.3	5	ST	O	Heart Rate	EventtManualCO.HR (smallint)
6	60	CE	O	Units	Always “L/min”
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example ManualCO OBX:

OBX|22|ST|Event_ManualCO||1^4.65^72|l/min|||||F|||20010307081824|||

Event_PPG_Measurement OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "Event_PPGradient"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	32	ST	O	Valve Type	EventPPGMeasurement.ValveType resolve from ValveType.Name
5.3	32	ST	O	Site Label Pressure 1	EventPPGMeasurement.SiteLabelPressure1
5.4	8	ST	O	Mean Systolic Pressure 1	EventPPGMeasurement.MeanSystolicValuePres1 (real)
5.5	5	ST	O	Heart Rate Pressure 1	EventPPGMeasurement.HRPressure1 (smallint)
5.6	16	ST	O	Label Group Pressure 1	EventPPGMeasurement.LabelGroup_P1 (resolve for string)
5.7	32	ST	O	Site Label Pressure 2	EventPPGMeasurement.SiteLabelPressure2
5.8	8	ST	O	Mean Systolic Pressure 2	EventPPGMeasurement.MeanSystolicValuePres2 (real)
5.9	5	ST	O	Heart Rate Pressure 2	EventPPGMeasurement.HRPressure2 (smallint)
5.10	16	ST	O	Label Group Pressure 2	EventPPGMeasurement.LabelGroup_P2 (resolve for string)
5.11	8	ST	O	Peak to Peak Gradient	EventPPGMeasurement.MeanPtoPGradient (real)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
5.12	1	ST	O	Manually Edited Flag (0 or 1)	EventPPGMeasurement.ManuallyEdited
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example PPGradient OBX:

OBX|22|ST|Event_PPGradient||2^MITRAL^LV^118^73^^AO^126^73^^8^0||||||F|||20010307082914

Event_Valve_Area_Analysis OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “Event_ValveAreaAnalysis”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	32	ST	O	Value Type	EventValveAreaAnalysis.ValveType resolve from ValveType.Name
5.2	4	ST	O	Phase	Phase Number
5.3	32	ST	O	Site Label Pressure 1	EventValveAreaAnalysis.SiteLabelPressure1
5.4	8	ST	O	Mean Pressure 1	EventValveAreaAnalysis.MeanPressure1 (real)
5.5	8	ST	O	Mean Diastolic Pressure 1	EventValveAreaAnalysis.MeanDiastolicValue1 (real)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
5.6	8	ST	O	Mean Systolic Pressure 1	EventValveAreaAnalysis.MeanSystolicValuePres1 (real)
5.7	8	ST	O	Mean A Wave Pressure 1	EventValveAreaAnalysis.MeanAWaveValuePres1 (real)
5.8	8	ST	O	Mean V Wave Pressure 1	EventValveAreaAnalysis.MeanVWaveValuePres1 (real)
5.9	5	ST	O	Heart Rate Pressure 1	EventValveAreaAnalysis.HRPressure1 (smallint)
5.10	16	ST	O	Label Group Pressure 1	EventValveAreaAnalysis.LabelGroup_P1 (resolve for string)
5.11	32	ST	O	Site Label Pressure 2	EventValveAreaAnalysis.SiteLabelPressure2
5.12	8	ST	O	Mean Pressure 2	EventValveAreaAnalysis.MeanPressure2 (real)
5.13	8	ST	O	Mean Diastolic Pressure 2	EventValveAreaAnalysis.MeanDiastolicValue2 (real)
5.14	8	ST	O	Mean Systolic Pressure 2	EventValveAreaAnalysis.MeanSystolicValuePres2 (real)
5.15	8	ST	O	Mean A Wave Pressure 2	EventValveAreaAnalysis.MeanAWaveValuePres2 (real)
5.16	8	ST	O	Mean V Wave Pressure 2	EventValveAreaAnalysis.MeanVWaveValuePres2 (real)
5.17	5	ST	O	Heart Rate Pressure 2	EventValveAreaAnalysis.HRPressure2 (smallint)
5.18	16	ST	O	Label Group Pressure 2	EventValveAreaAnalysis.LabelGroup_P2 (resolve for string)
5.19	8	ST	O	Mean Gradient	EventValveAreaAnalysis.MeanGradient (real)
5.20	8	ST	O	Valve Area	EventValveAreaAnalysis.ValveArea (real)
5.21	8	ST	O	Valve Area Index	EventValveAreaAnalysis.ValveAreaIndex (real)
5.22	8	ST	O	Valve Flow	EventValveAreaAnalysis.ValveFlow (real)
5.23	8	ST	O	DFP/SEP	EventValveAreaAnalysis.DFPSEP (real)
5.24	8	ST	O	Cardiac Output Value Used	EventValveAreaAnalysis.COUsed (real)
5.25	8	ST	O	Ejection Time / Filling Time	EventValveAreaAnalysis.ETimeFTime (real)
5.26	10	ST	O	Phase Shift P1 P2	EventValveAreaAnalysis.PhaseShiftP1P2 (int)
5.27	1	ST	O	Manually Edited Flag (0 or 1)	EventPPGMeasurement.ManuallyEdited
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example Valve Area Analysis OBX:

OBX|52|ST|Event_ValveAreaAnalysis||Generic^2^PCW^90.00^0.00^0.00^122.20^123.40^69^PCW^PA^95.00^79.00^123.00^0.00^0.00^69^PA^2.09^3.99^2.56^255.82^14.85^3.80^0.22^0^0||||||F|||20011003150217||||

Event_O2_Saturation OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “Event_O2Sat”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Sample Site	EventO2Saturation.Site (resolve for string)
5.2	4	ST	O	Phase	Phase Number
5.3	8	ST	O	Sample Saturation	EventO2Saturation.Saturation (real)
5.4	8	ST	O	Sample HB	EventO2Saturation.HB (real)
5.5	8	ST	O	Sample PO2	EventO2Saturation.PO2 (real)
5.6	8	ST	O	Sample Content	EventO2Saturation.Content (real)
5.7	16	ST	O	Sample Group	O2SatGroup.Group resolved from EventO2Saturation.GroupType
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Sample Time)	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example O2_Sat OBX:

OBX|41|ST|Event_O2Sat||AO^1^98.00^13.00^120.00^17.68^SA|||||F|||20011003145843||||

Event_Pressure_Measurement OBX (Reporting Structure)

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Event_ValveAreaAnalysis or Event_CathPressure
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	32	ST	O	Measurement Name	EventCathPresMeas.ChannelLabel
5.2	4	ST	O	Phase	Phase Number
5.3	32	ST	O	Measurement Type	EventCathPresMeas.MeasType
5.4	8	ST	O	Systolic	EventCathPresMeas.AvgSystolic
5.5	8	ST	O	Diastolic	EventCathPresMeas.AvgDiastolic
5.6	8	ST	O	End Diastolic	EventCathPresMeas.AvgEndDiastolic
5.7	8	ST	O	Max dP/dT	EventCathPresMeas.MaxDPDT
5.8	8	ST	O	Mean	EventCathPresMeas.Mean
5.9	8	ST	O	A Wave	EventCathPresMeas.AvgA
5.10	8	ST	O	V Wave	EventCathPresMeas.AvgV
5.11	4	ST	O	Heart Rate	EventCathPresMeas.MeanHR
5.12	1	ST	O	Manually Edited Flag (0 or 1)	EventCathPresMeas.ManuallyEdited
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Change from older versions is that PVW (including LPVW and RPVW) uses s/dm instead of a/v/m.

Example Event_CathPressure OBX:

OBX|53|ST|Event_CathPressure||LV^0^VENT_TYPE^191^^39^1536^^^^69^0||||||F|||20010307081824

OBX|76|ST|Event_CathPressure||AO^0^ARTERIAL_TYPE^118^81^^^97^^^84^0||||||F|||20010307082157

OBX|83|ST|Event_CathPressure||PCW^1^AWEDGE_TYPE^^^^^7^10^8^69^1||||||F|||20010307082322

OBX|14|ST|Event_CathPressure||VEN^1^VENOUS_TYPE^^^^^9^^^^1||||||F|||20010307081316

Cath Hemodynamic Measurement Reporting Structures

Mac-Lab can produce over 350 discrete clinical measurements. Although not all measurements would be provided in a test, any combination can be present. The measurement values taken during the study are stored in one of six (6) different formats/structures, depending upon the content of the measurement. The structures and associated observations are listed below. The formats of the measurement structures are fixed and are not user configurable.

The information reported in these Hemodynamic Measurement reporting structures are the clinical values used for hemodynamic analysis. The values included in these structures are synchronized with other values in this section (for example, a particular cardiac output reported in the General Structure is the same one used in the computation of the Valve Pressure Structure irrespective of the multiple raw cardiac output events recorded in a hemodynamic phase).

General Structure

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “HemoMeas_General”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Measurement Name	Result.indexNum resolved for a text string
5.2	4	ST	O	Phase	Phase Number
5.3	16	ST	O	Source	Result.SourceType
5.4	8	ST	O	Value	Result.Value (real)
6	60	CE	O	Units	Result.Unit resolved from SystemUnit.Name
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Current Phase Event time formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Source: Each measurement is flagged as to the source of the information. Generally, for all measurements except for VO2, the source represents whether the value was Calculated or Manually Entered. For VO2, it represents the specific algorithm used to derive the VO2 value (second column below). Possible values for this field include:

Manual Entry La Farge

Calculated K * BSA

Measured 125 * BSA

Estimated 3 * Wt(kg)

1.4*Ht+0.8*Wt-36

The following measurements will be formatted in this type of OBX:

- AERP
- AGE
- ARTCON
- ARTSAT
- BOX_DIFF
- AV_AREA
- AV_FLOW
- AV_NDX
- AV_SEP
- BARPRES
- BSA
- CSNRT
- EXPO2
- FICKCI
- FICKCO
- FICKHR
- GENDER (0=M, 1=F)
- HB
- HEIGHT_CM
- INSPO2
- LRFLOW
- LRFLOWI
- LSHNT
- LVSW
- LVSWI
- MANCI
- MANCO
- MV_AREA
- MV_DFP
- MV_FLOW
- MV_NDX
- PACON
- PASAT
- PO2
- PV_AREA
- PV_FLOW
- PV_NDX
- PV_SEP
- PVCON
- PVR_DSC
- PVR_WU
- PVRI_DSC

- PVRI_WU
- PVRSVR_RATIO
- PVSAT
- QPEFF
- QPEFFI
- QPI
- QPQS_RATIO
- QSI
- RLFLOW
- RLFLOWI
- ROOMO2
- ROOMTEMP
- RSHNT
- RVSW
- RVSWI
- SCLV
- SHNT
- SP_AREA
- SP_FLOW
- SP_NDX
- SP_SEP
- STROKEI
- STROKEV
- SVR_DSC
- SVR_WU
- SVRI_DSC
- SVRI_WU
- TDCI
- TDCO
- TPR_DSC
- TPR_WU
- TPRI_DSC
- TPRI_WU
- TPRTVR_RATIO
- TV_AREA
- TV_DFP
- TV_FLOW
- TV_NDX
- TVR_DSC
- TVR_WU
- TVRI_DSC
- TVRI_WU
- VEATPS

- VENCON
- VENSAT
- VERP
- VO2
- WEIGHT_KG

General Structure Example:

OBX|24|ST|HemoMeas_General||BSA^0^CALCULATED^1.86|m2|||||F|||20010307084420|||

Pressure Structure

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “HemoMeas_Pressure”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Measurement Name	Result.indexNum resolved for a text string
5.2	4	ST	O	Phase	Phase Number
5.3	16	ST	O	Source	Result.SourceType
5.4	8	ST	O	Systolic	Result.Value
5.5	32	ST	O	Systolic Units	Result.Unit resolved from SystemUnit.Name
5.6	8	ST	O	Diastolic	Result.Value
5.7	32	ST	O	Diastolic Units	Result.Unit resolved from SystemUnit.Name
5.8	8	ST	O	Mean	Result.Value
5.9	32	ST	O	Mean Units	Result.Unit resolved from SystemUnit.Name
5.10	8	ST	O	Heart Rate	Result.Value
5.11	32	ST	O	Heart Rate Units	Result.Unit resolved from SystemUnit.Name
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Current Phase Event time formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

The following measurements will be formatted in this type of OBX:

- ABAO
- AO
- ARCH
- ART
- ASAO
- AXA
- BA
- CARA
- CNDT
- COL
- COR
- DSAO
- FA
- FCLA
- FCLV
- FCRA
- FCRV
- FIS
- HABAO
- HAO
- HARCH
- HASAO
- HDSAO
- HEPA
- HNAO
- HUA
- IMA
- INNA
- LABAO
- LAO
- LARCH

- LART
- LASAO
- LAXA
- LBA
- LCARA
- LCNDT
- LCOL
- LCOR
- LDSAO
- LFA
- LFCLA
- LFCLV
- LFCRA
- LFCRV
- LFIS
- LHEPA
- LIMA
- LINNA
- LNAO
- LNPA
- LPA
- LPAB
- LPACN
- LPAVF
- LPDA
- LRADA
- LRENA
- LSBCA
- LSP
- LTAC
- LUA
- LVRTA
- NAO
- NPA
- PA
- PAB
- PACN
- PAVF
- PDA
- RADA
- RART
- RAXA
- RBA

- RCARA
- RCNDT
- RCOL
- RCOR
- RENA
- RFA
- RFCLA
- RFCLV
- RFCRA
- RFCRV
- RFIS
- RHEPA
- RIMA
- RINNA
- RNPA
- RPA
- RPAB
- RPACN
- RPAVF
- RPDA
- RRADA
- RRENA
- RSBCA
- RSP
- RTAC
- RVRTA
- SBCA
- SP
- TAC
- UA
- VRTA

Pressure Structure Example:

OBX|4|ST|HemoMeas_Pressure||AO^0^CALCULATED^175^mmHg^72^mmHg^110^mmHg^64^beats/min||||||F|| |20010307084420|||

Mean Pressure Structure

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “HemoMeas_Mean_Pressure”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Measurement Name	Result.indexNum resolved for a text string
5.2	4	ST	O	Phase	Phase Number
5.3	32	ST	O	Source	Result.SourceType
5.4	8	ST	O	Value	Result.Value
5.5	32	ST	O	Value Units	Result.Unit resolved from SystemUnit.Name
5.6	8	ST	O	Heart Rate	Result.Value
5.7	32	ST	O	Heart Rate Units	Result.Unit resolved from SystemUnit.Name
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation (Sample Time)	Current Phase Event time formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

The following measurements will be formatted in this type of OBX:

- ACV
- AXV
- AZV
- BV
- CVP
- FV

- HAZ
- HCVP
- HEPV
- HIVC
- HSVC
- HUV
- HVC
- INNV
- IVC
- LACV
- LAXV
- LAZV
- LBV
- LCVP
- LFV
- LHAZ
- LHEPV
- LINNV
- LIVC
- LRENV
- LSCLV
- LSPHV
- LSVC
- LUV
- LVC
- LVEN
- RACV
- RAXV
- RAZV
- RBV
- RENV
- RFV
- RHAZ
- RHEPV
- RINNV
- RRENV
- RSCLV
- RSPHV
- RVEN
- SCLV
- SPHV
- SVC
- UV

- VC
- VEN

Mean Pressure Structure Example:

OBX|34|ST|HemoMeas_MeanPressure||VEN^2^MEASURED^175^mmHg^64^beats/min||||||F|||20010307084420|||

Ventricular Pressure Structure

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “HemoMeas_Ventricular”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Measurement Name	Result.indexNum resolved for a text string
5.2	4	ST	O	Phase	Phase Number
5.3	32	ST	O	Source	Result.SourceType
5.4	8	ST	O	Systolic	Result.Value
5.5	32	ST	O	Systolic Units	Result.Unit resolved from SystemUnit.Name
5.6	8	ST	O	End Diastolic	Result.Value
5.7	32	ST	O	End Diastolic Units	Result.Unit resolved from SystemUnit.Name
5.8	8	ST	O	Heart Rate	Result.Value
5.9	32	ST	O	Heart Rate Units	Result.Unit resolved from SystemUnit.Name
5.10	8	ST	O	dP/dt	Result.Value
5.11	32	ST	O	dP/dt Units	Result.Unit resolved from SystemUnit.Name
5.12	8	ST	O	Diastolic	Result.Value
5.13	32	ST	O	Diastolic Units	Result.Unit resolved from SystemUnit.Name
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

The following measurements will be formatted in this type of OBX:

- CV
- HLV
- HLVA
- HLVIN
- HLVOC
- HLVOT
- HRV
- HRVA
- HRVIN
- HRVOC
- HRVOT
- IB
- LCV
- LIB
- LLV
- LLVA
- LLVIN
- LLVOC
- LLVOT
- LPVCH
- LRV
- LRVA
- LRVIN
- LRVOC
- LRVOT
- LSB
- LV
- LVA
- LVIN
- LVOC
- LVOT
- PVCH

- RCV
- RIB
- RPVCH
- RSB
- RV
- RVA
- RVIN
- RVOC
- RVOT
- SB

Ventricular Pressure Structure Example:

OBX|34|ST|HemoMeas_Ventricular||LV^1^MEASURED^124^mmHg^18^mmHg^64^beats/min^1536^mmHg/sec|||||F|| |20010307084420|||

Valve Structure

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “HemoMeas_Valve”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Measurement Name	Result.indexNum resolved for a text string
5.2	4	ST	O	Phase	Phase Number
5.3	16	ST	O	Source	Result.SourceType
5.4	4	ST	O	Heart Rate	Result.Value
5.5	32	ST	O	Heart Rate Units	Result.Value
5.6	16	ST	O	Left Site Label	Result.Value
5.7	8	ST	O	Left Systolic	Result.Value
5.8	32	ST	O	Left Systolic Units	Result.Unit resolved from SystemUnit.Name
5.9	8	ST	O	Left Diastolic	Result.Value
5.10	32	ST	O	Left Diastolic Units	Result.Unit resolved from SystemUnit.Name
5.11	16	ST	O	Right Site Label	Result.Value
5.12	8	ST	O	Right Systolic	Result.Value
5.13	32	ST	O	Right Systolic Units	Result.Unit resolved from SystemUnit.Name
5.14	8	ST	O	Right Diastolic	Result.Value
5.15	32	ST	O	Right Diastolic Units	Result.Unit resolved from SystemUnit.Name

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
5.16	8	ST	O	Valve Gradient	Result.Value
5.17	32	ST	O	Valve Gradient Units	Result.Unit resolved from SystemUnit.Name
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Current Phase Event time formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

The following measurements will be formatted in this type of OBX:

- AV_DUAL
- AV_PULL
- AV_SP
- NV_DUAL
- MV_DUAL_LA
- MV_DUAL_PCW
- MVPULL_LVLA
- MVPULL_LVPCW
- MVSP_LVLA
- MVSP_LVPCW
- NV_PULL
- PV_DUAL
- PV_PULL
- PV_SP
- V_SP
- TV_DUAL
- TV_PULL
- TV_SP

Valve Structure Example:

OBX|30|ST|HemoMeas_Valve||V_SP^2^Measured^69^beats/
min^PCW^0.00^mmHg^0.00^mmHg^PA^123.00^mmHg^79.00^mmHg^2.09^mmHg||||||F|||20011
003150144|||

Atrial Wedge Structure

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “HemoMeas_AtrialWedge”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	16	ST	O	Measurement Name	Result.indexNum resolved for a text string
5.2	4	ST	O	Phase	Phase Number
5.3	32	ST	O	Source	Result.SourceType
5.4	8	ST	O	A Wave	Result.Value
5.5	32	ST	O	A Wave Units	Result.Unit resolved from SystemUnit.Name
5.6	8	ST	O	V Wave	Result.Value
5.7	32	ST	O	V Wave Units	Result.Unit resolved from SystemUnit.Name
5.8	8	ST	O	Mean	Result.Value
5.9	32	ST	O	Mean Units	Result.Unit resolved from SystemUnit.Name
5.10	8	ST	O	Heart Rate	Result.Value
5.11	32	ST	O	Heart Rate Units	Result.Unit resolved from SystemUnit.Name
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Current Phase Event time formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

The following measurements will be formatted in this type of OBX:

- APV
- CA
- CS
- DCS
- HLA
- HRA
- JX
- LA
- LAPV
- LCA
- LJX
- LLA
- LPAW
- LPCW
- LPV
- LPVAT
- LPVCN
- LPVW
- LRA
- LSVA
- PAW
- PCS
- PCW
- PV
- PVAT
- PVCN
- PVW
- RA
- RAPV
- RCA
- RJX
- RPAW
- RPCW
- RPV
- RPVAT
- RPVCN
- RPVW
- RSVA
- SVA

Atrial Wedge Structure Example:

OBX|23|ST|HemoMeas_AtrialWedge||PCW^2^Measured^74.00^mmHg^123.00^mmHg^93.00^mmHg^69^beats/min||||||F|||20011003150144||||

EP Reporting Structures

The structures and associated observations for EP measurements are listed below. The formats of the measurement structures are fixed and are not user configurable.

EP SNRT

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “EP_SNRT”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	5	ST	O	SNRT pacing interval in ms	EventSNRT.PacingInterval (smallint)
5.2	5	ST	O	Corrected SNRT in ms	EventSNRT.CSRTInterval (smallint)
5.3	5	ST	O	Max SNRT in ms	EventSNRT.MaxSNRT (smallint)
5.4	5	ST	O	SNRT sinus cycle length in ms	EventSNRT.SinusCycleLength (smallint)
5.5	256	ST	O	SNRT comment	EventBlock1.EventComment
5.6	10	ST	O	Event Datapoint	EventBlock1.eventdatapoint
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	Current Phase Event Time formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

EP SNRT Example:

OBX|2|ST| EP_ SNRT ||525^520^550^100^no comments^34567|||||F|||20011003150144||||

EP ATGD

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “EP_ATGD”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	32	ST	O	Refractory region	EventATGD.RefractoryRegion
5.2	32	ST	O	Refractory type	EventATGD.Type resolved to string
5.3	5	ST	O	Refractory period in ms	EventATGD.TextRefractoryPeriod (smallint)
5.4	5	ST	O	S1-S1 Interval in ms	EventATGD.S1S1Interval (smallint)
5.5	256	ST	O	Refractory comment	EventBlock1.EventComment
5.6	10	ST	O	Event Datapoint	EventBlock1.eventdatapoint
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

EP ATGD Example:

OBX|3|ST| EP_ ATGD ||AV Nodal^ERP^240^600^no comments^34567||||||F|||20011003150144||||

EP Baseline Conduction

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “EP_BaselineConduction”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	5	ST	O	AA interval in ms	EventBSLC.NAA (smallint)
5.2	5	ST	O	VV interval in ms	EventBSLC.NVV (smallint)
5.3	5	ST	O	PR interval in ms	EventBSLC.NPR (smallint)
5.4	5	ST	O	QRS Duration in ms	EventBSLC.NQRSDUR (smallint)
5.5	5	ST	O	QT interval in ms	EventBSLC.NQT (smallint)
5.6	5	ST	O	HIS duration in ms	EventBSLC.NHISDUR (smallint)
5.7	5	ST	O	AH interval in ms	EventBSLC.NAH (smallint)
5.8	5	ST	O	PA interval in ms	EventBSLC.NPA (smallint)
5.9	5	ST	O	HV interval in ms	EventBSLC.NHV (smallint)
5.10	5	ST	O	VA interval in ms	EventBSLC.NVA (smallint)
5.11	12	ST	O	Corrected QT interval (for HR) in ms	EventBSLC.DQTC (float)
5.12	10	ST	O	Event Datapoint	EventBSLC.eventdatapoint
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

EP Baseline Conduction Example:

OBX|2|ST| EP_BaselineConduction
||645^700^140^94^390^200^145^130^104^110^417^34567||||||F|||20011003150144||||

EP Arrhythmia

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “EP_Arrhythmia”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	128	ST	O	Arrhythmia type	EventArrhythmia.ArrhythmiaType
5.2	26	TS	O	Start time	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
5.3	5	ST	O	Duration of Arrhythmia in s	EventArrhythmia.Duration (smallint)
5.4	16	ST	O	Sustained? 0=No and 1=Yes	YesNo.YesNoText resolved from EventArrhythmia.Sustained (1=Yes, 0=No)
5.5	5	ST	O	Number of Cycles	EventArrhythmia.NumOfCycle (smallint)
5.6	5	ST	O	Ventricular cycle length in ms	EventArrhythmia.VerticalCycleLength (smallint)
5.7	5	ST	O	Atrial cycle length in ms	EventArrhythmia.AtrialCycleLength (smallint)
5.8	32	ST	O	Tolerance	EventArrhythmia.ArrhythmiaTolerances
5.9	128	ST	O	Initiation	EventArrhythmia.Initiation
5.10	128	ST	O	Termination	EventArrhythmia.Termination
5.11	26	TS	O	Stop time	EventArrhythmia.StopTime or Not Used
5.12	10	ST	O	Event Datapoint	EventArrhythmia.eventdatapoint
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

EP Arrhythmia Example:

OBX|2|ST| EP_ Arrhythmia ||0^20021219101602^0^N^0^384^-
1^^^^20021219101602^34567||||||F|||20011003150144||||

Or

OBX|2|ST| EP_ Arrhythmia ||0^20110215183225^0^N^0^384^-

1^^^^^34567||||||F|||20110215183225||||

EP Conduction Block

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “EP_ConductionBlock”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	5	ST	O	Pacing interval in ms	EventConductionBlock.PacingInterval (smallint)
5.2	32	ST	O	Description	EventConductionBlock.BlockDescription
5.3	10	ST	O	Event Datapoint	EventConductionBlock.eventdatapoint
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

EP Conduction Block Example:

OBX|2|ST| EP_ ConductionBlock ||200^2:1 AV Block^34567||||||F|||20011003150144||||

EP_Ablation

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "EP_Ablation"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	32	ST	O	Counter for RF Applications	“#” where # is sequential counter of RF Ablations
5.2	26	TS	O	Start time of ablation event	EventBlock1.EventTime
5.3	26	TS	O	Stop time of ablation event	EventAblation.StopTime
5.4	5	ST	O	Duration in s	EventAblation.Duration (smallint)
5.5	32	ST	O	Target arrhythmia	EventAblation.TargetArrhythmia
5.6	32	ST	O	Result	EventAblation.Result
5.7	8	ST	O	Max temperature 1 in deg cel	EventAblation.MaxTemp1 (real)
5.8	8	ST	O	Average temperature 1 in deg cel	EventAblation.AvgTemp1 (real)
5.9	8	ST	O	Max power in watts	EventAblation.MaxPower (real)
5.10	8	ST	O	Average power in watts	EventAblation.AvgPower (real)
5.11	8	ST	O	Max impedance in ohms	EventAblation.MaxImpedence (real)
5.12	8	ST	O	Average impedance in ohms	EventAblation.AvgImpedence (real)
5.13	8	ST	O	Max current in mA	EventAblation.MaxCurrent (real)
5.14	8	ST	O	Average current in mA	EventAblation.AvgCurrent (real)
5.15	8	ST	O	Max voltage in V	EventAblation.MaxVoltage (real)
5.16	8	ST	O	Average voltage in V	EventAblation.AvgVoltage (real)
5.17	32	ST	O	Device name	EventAblation.DeviceName
5.18	256	ST	O	Ablation comment	EventBlock1.EventComment
5.19	10	ST	O	Event Datapoint	EventBlock1.eventdatapoint
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Device name can be one of; CryoCath, PEIAtakr, PEIEpt1000, PEIStockert, PEIHat300S, PEIIbi1500T. This is not a complete list.

EP Ablation Example:

OBX|2|ST| EP_ Ablation ||1^20021219101855^20021219101909^14^^^52.00^44.00^50.00^36.00^149.00^135.00^616.00^497.00^83.00^67.00^PEIEPT1000^no comment^34567||||||F|||20011003150144||||

EP_3DMap

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always "EP_3DMap"
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Phase	Phase Number
5.2	26	ST	O	Reference Annotation Time in ms	EventCartoMapPoint.systemtime
5.3	32	ST	O	Map ID	EventCartoMapPoint.mapid
5.4	32	ST	O	Map Name	EventCartoMapPoint.mapname
5.5	10	ST	O	Point ID	EventCartoMapPoint.PointIndex
5.6	10	ST	O	LAT in ms	EventCartoMapPoint.lat
5.7	10	ST	O	Unipolar in uV	EventCartoMapPoint.unipolar
5.8	10	ST	O	Bipolar in uV	EventCartoMapPoint.bipolar
5.9	32	ST	O	Type	EventCartoMapPoint.type
5.10	32	ST	O	Tag	EventCartoMapPoint.tag
5.11	256	ST	O	Comment	EventBlock1.EventComment
6	60	CE	O	Units	Not Used

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example OBX Segment:

OBX|14|ST| EP_3DMap || 0^2^21345^RCA^43255^245^12.3^20.6^Point Type^Point Tag^comment||||||F|||20011003144143||||

EP_Pacing

SEQ	LEN	DT	GEHC Required Field	ELEMENT NAME	MAC-LAB/CARDIOLAB FIELD
1	4	SI	O	Set ID - OBX	Start sequential counter within an OBR nest.
2	3	ID	R	Value Type	Always "ST"
3	200	CE	R	Observation Identifier	Always “EP_Pacing”
4	20	ST	C	Observation Sub-ID	Not Used
5	65536	*	C	Observation Value	Set as the observed result or reporting structure
5.1	4	ST	O	Channel Name	Channel Name
5.2	26	ST	O	Channel Number	Channel Number (base zero)
6	60	CE	O	Units	Not Used
7	60	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	R	Observation Result Status	"F"
12	26	TS	O	Date Last Obs Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	26	TS	R	Date/Time of the Observation	EventBlock1.EventTime formatted as YYYYMMDDHHMMSS
15	60	CE	O	Producer's ID	Not Used
16	80	XCN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Example OBX Segment:

OBX|14|ST| EP_Pacing|| A1^63|||||F|||20011003144143||||