

BBC Wales AUDIO DIGITIZATION – BISA 2018

BBC CYMRU WALES ARCHIVE

British Broadcasting Company was established in 1922

BBC's first broadcast from Wales – 13th Feb 1923

No recordings from early years – all broadcast live

Scripts and programme schedules/running orders have survived



BBC CYMRU WALES' ARCHIVE

WW2 – reporting the conflict on radio

BBC's Light Entertainment moved from London to Bangor

Early content includes:

- Radio plays
- Education and schools programmes
- News and sport



CREATIVE
NATION
CYMRU
GREADIGOL

BBC | cymru
wales

CREATIVE
NATION
CYMRU
GREADIGOL



BBC | cymru
wales

1950's, 1960's, 1970's

Output expanded to include all genres to provide a wide range of information, education and entertainment

Broadcast in English and Welsh on radio and TV

Radio Wales and Radio Cymru – launched in 1978

Collection now forms a valuable record of people's lives, culture, traditions and interests of the people of Wales

BROADCAST LANDSCAPE IN WALES

1980'S, 1990, 2000

BBC Wales – funded through the licence fee

ITV Wales – commercially funded

S4C – Welsh language channel launched in 1982

HOW ARCHIVE IS USED

BBC productions – internal use for public service programmes

BBC Studios and Independent Companies– external use for public service broadcast

Commercial exploitation – licensed to production companies for other broadcasters/corporate use

BBC Wales/S4C archive agreement

THE PRESENT

BBC Wales is relocating to a new building in 2019

Co-locating with S4C

Providing playout, technology and archive services

New building has smaller footprint

Significant investment to digitise BBC Wales archive holdings

S4C digitising their collections separately

BBC WALES CENTRAL SQUARE



ARCHIVE PREPARATIONS FOR THE MOVE

90 years' worth of content doesn't move itself...!

AV & AUDIO DIGITIZATION

64,500 AV tapes digitised (Beta SP, Beta SX, Digibeta and HD formats)

97,000 audio assets (1/4", DATs, minidiscs, CDs)

Digital files ingested into BBC Digital Archive/Radio Digital Archive

Digitization for access, not for preservation

Minimum/existing metadata for digitization/ingest

Format conversion only – no metadata enhancement

FILM DIGITIZATION

13,000 film cans

Approximately 75% transferred to tape

Plan A - relocation

Plan B – digitization

1300 hours/75 hours per month

Early news and sport – complete by October 2019

THERE'S STILL MUCH TO DO...

Appraisal/selection/digitization

Production Files - 1548 boxes

Corporate Archive – 107 boxes

Stills collection – mix of copyright

AV rushes

Decommissioning/donation/disposal of assets
in line with policy

BBC Archives

Securing the past for the future

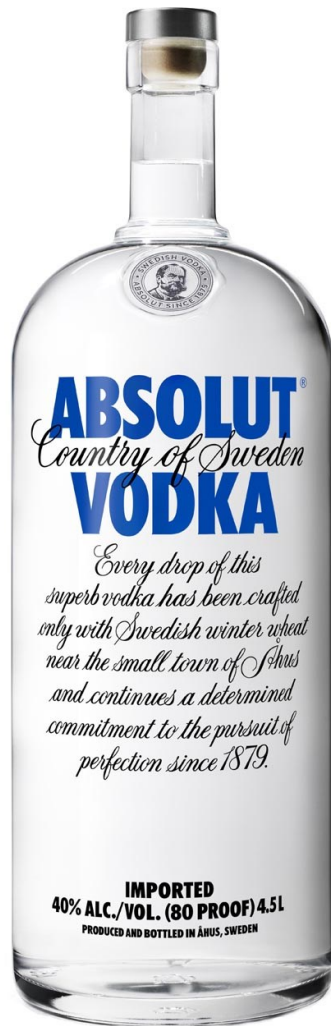








CONSTANT
RECORD



ABSOLUT
Country of Sweden
VODKA

*Every drop of this
superb vodka has been crafted
only with Swedish winter wheat
near the small town of Åhus
and continues a determined
commitment to the pursuit of
perfection since 1879.*

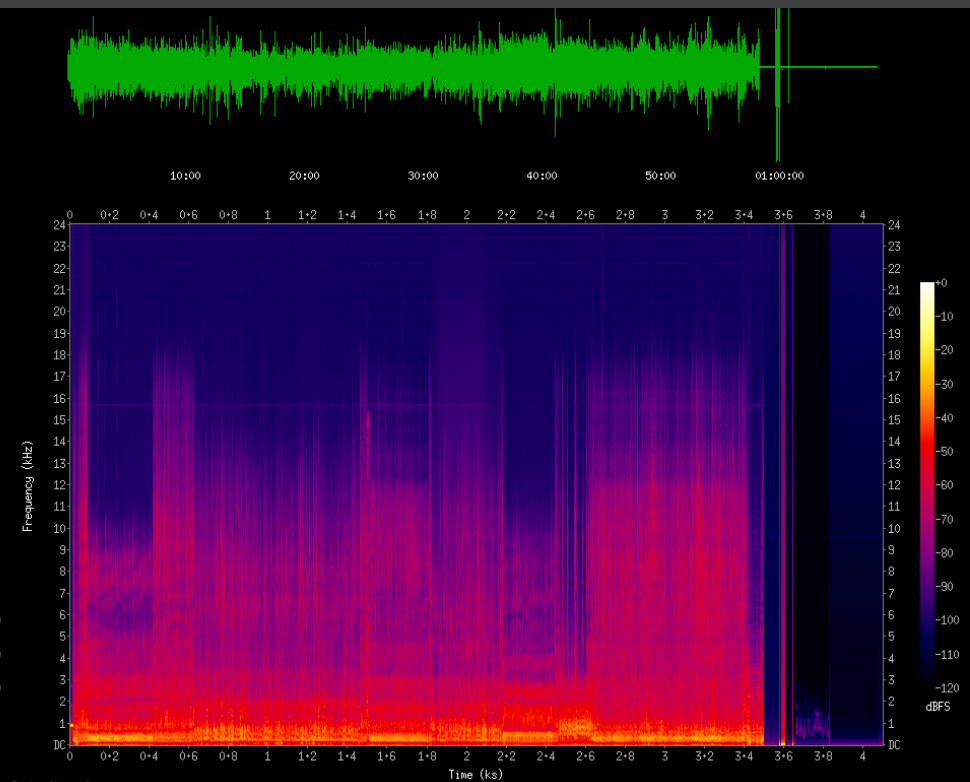
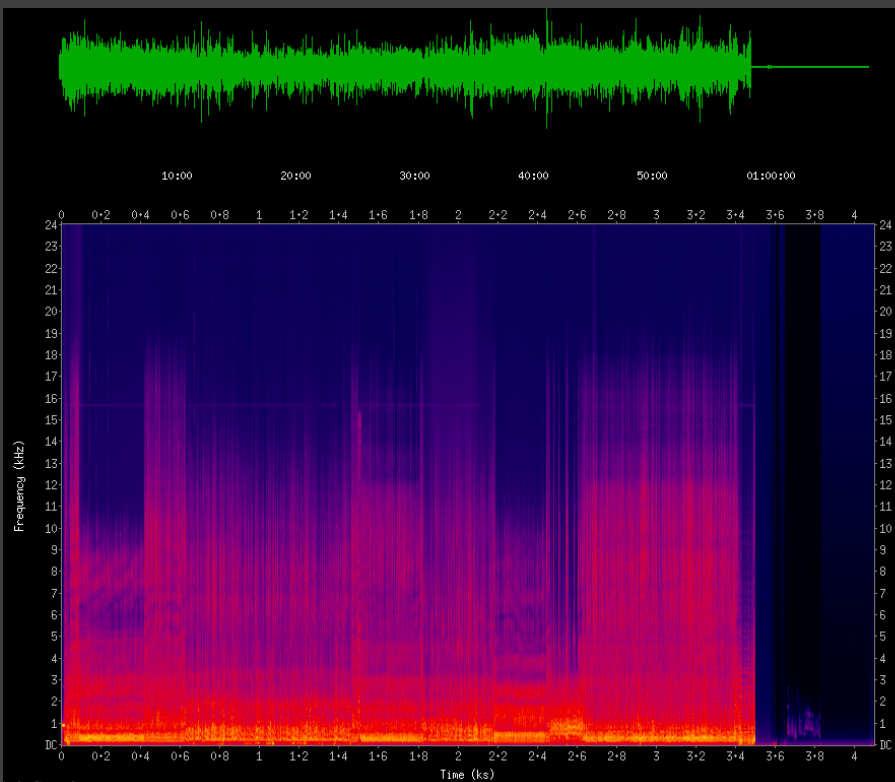
IMPORTED
40% ALC./VOL. (80 PROOF) 4.5L
PRODUCED AND BOTTLED IN ÅRHUS, SWEDEN

ASSETS

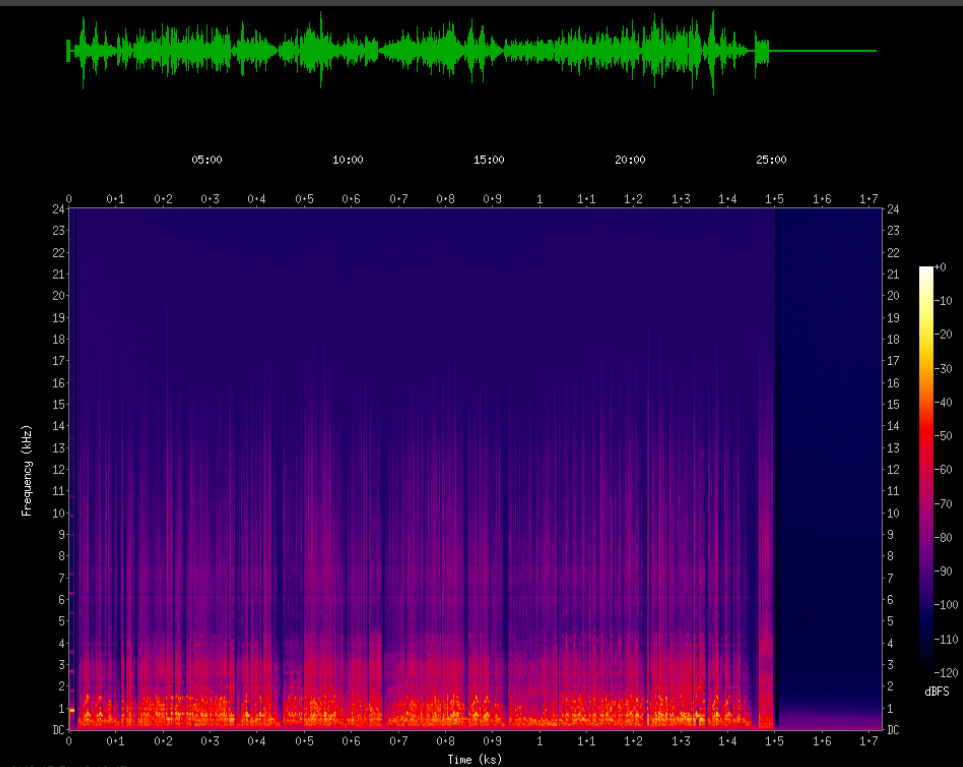
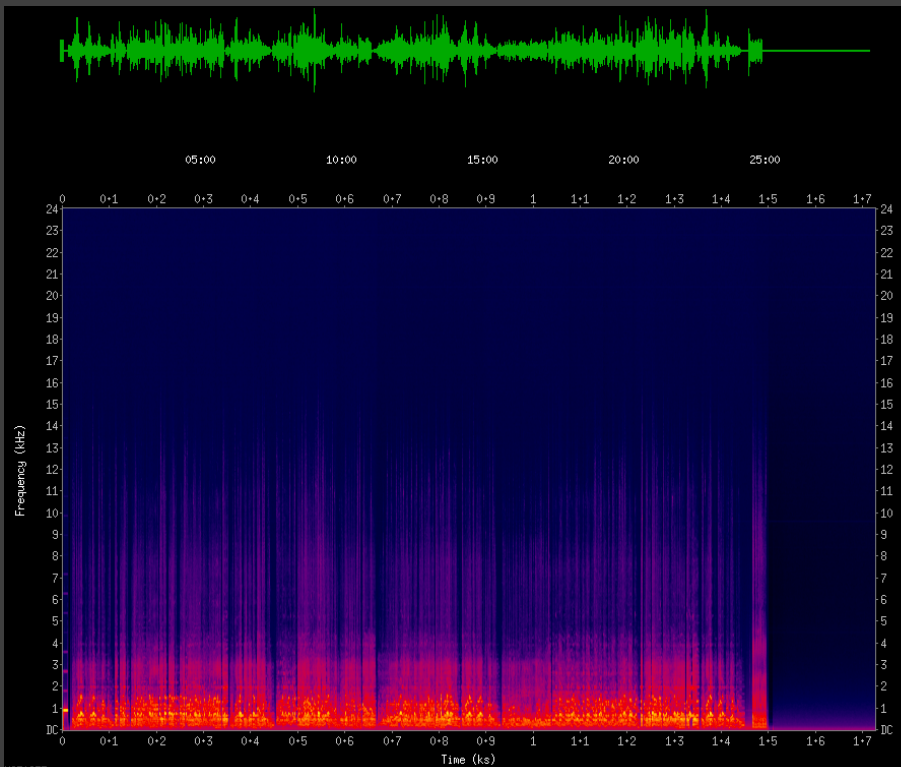
ASSETS
HOURS

ASSETS
HOURS
TONNES

SOX : FFT



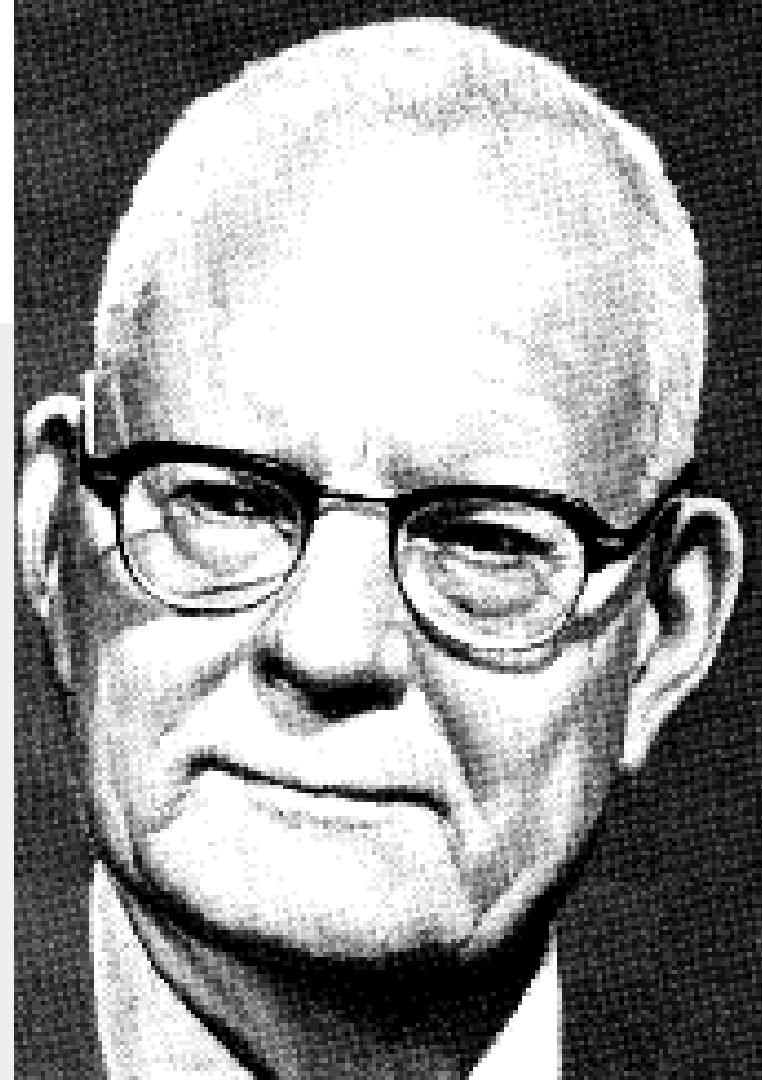
SOX : FFT





**“Without data
you’re just another
person with an
opinion”**

W. Edwards Deming



FACTORY - LEAN

Prepare

Diagnose

Design

Plan

Implement

Sustain

Processes

**Think and
feel**

**Manage
and
Measure**

File

Browse

f_id	f_asset	f_spool_no	f_session	f_intake_status	Sess_int_status	ingest_status	f_session_ingest	f_qc_status	f_qc_status_dd	f_qc_notes	f_manifest	f_ingest_not	f_location	f_programme_title	f_episode	Prog_no	f_inge
	PRM19081	X00027470	PRM19081	Intake Fail				Not Set		(Memo)		(Memo)	0	UNIVERSITÄT SABS		86EA1036	

Search By

All

Limit to 500

Refresh

Asset

PRM19081

Session Contents

Location

ID

ATR Ser

Ingest Station

ProgNo

All

1/4"

CD

MD

DAT

Filter By

All

Intake Absent

Intake Hold

Intake Failed

Images Req

Images Hold

Intake Pass

Int Sess Hold

Int Sess Pass

Int Sess Fail

Ingest Absent

Ingest Hold

Ingest Failed

Re-Ingest

Ingest Pass

Ingest Rec

Ing Sess Pend

Ing Sess Hold

Ing Sess Pass

Ing Sess Fail

QC Pass

QC Hold

QC Required

QC Failed

QC ReIngest

QC Absent

QC Sess Hold

QC Sess Pass

QC Sess Fail

Ingest Rec

Series Title

Prog Title

Prog No

Manifest Notes

Intake Notes

Ingest Notes

QC Notes

QC Type Filter

All

Date Filter

All

Intake

QC

Ingest

Delivered

Rewind Sent

Date

13/11/2018

13/11/2018

Search Text

Order By

Intake Date

Ingest Date

QC Date

Location

Asset Number

Manifest ID

Prog No

Rew Del'vd

Ascending

Stats

Asset Stats

Items

Received

Ingested

Rew Sent

Others

Total Duration

Average length

Clipping

Connect

Export results

Export Table

Titles

CSV

OpenFile

Media Operations | Log | Files | SetUp | Diagnostics | TabSheet2 |

Item	Prog No	Spool	Accession	Location ID No	Intake Notes
PRM19081	86EA1036	X00027470	PRM019081	0 5814	of 1, Intake Session Parts Set to 1. Intake Status Set to: "Intake Fail" by Steve Matthews 13/11/2018 11:35:34
Session ID	Record Date	TX Date	Manf Item Parts	Session Parts	
PRM19081	04/12/1986	02/02/1987	1 of 1	Manf 1	
Manf Item Dur	Manf Prog Dur		Intake Item Parts	Intake	
00:20:00			1 of 1	Intake 1	
Programme Title	Manf Media Format				
UNIVERSITÄTSABSCHLUB. UND WAS DANN? T2	1/4 inch audio tape,				
Series Title	Actual Media Format				
DEUTSCH FÜR DIE OBERSTUFE	1/4 inch audio tape,				
Recording Description	Status				
1. FLASLER	Intake Status				
Duration Offset Status	Intake Session				
Manifest Notes	Ingest Status				
	Ingest Session				
	QC Not Set				
	Status				
	QC				
	QC Type				
	QC Session				
Intake Date	Digitised Dur				
13/11/2018 11:36:35					
Digitised Date	Ingest Station	ATR Serno	QC Date		

Intake	Asset - input	Status	Intake Fail
	PRM019081	Date	13/11/2018 11:36
	Session	Prog No	86EA1036
	PRM19081	Session	
	Session	Session	
	Status Date		
Issues	Reel Box Match	Damaged Sp1	Sticky Stuff
	Wrong Reel No	Cinch Coggled	Broken
	No Tape Label	Edge Damage	Splices Break
	Unreadable Text	Mould	Stretched
Add * to Alert Ingest Operator	Add Name	Add DateTime	
Intake Notes Save Update	Cancel		
Intake	Ingest	QC	QCWales
	Delivery	Log On	
File Location			

User : Steve Matthews

Table Edit Active Stev Database ID : dinch_plot

art

Biltracker14_0

Biltracker14_0

Labelprint1r

Tapechelab6

Bulbase1_5

Prmdbase3

12:39

Intake

Asset - input

PRM019081

Status

Intake Fail

Date

13/11/2018 11:36

PRM019081

Prog No

86EA1036

Session

PRM19081

Session

Status

Session

Status Date

Issues

Reel Box Match

Damaged Sp'l

Sticky Stuff

Wrong Reel No

Cinch Coggled

Broken

No Tape Label

Edge Damage

Splices Break

Unreadable Text

Mould

Stretched

Add * to Alert Ingest Operator

Add Name

Add DateTime

Intake Notes Save Update

Cancel

Actions

Manf Asset

1

of

Parts

Intake Asset

1

of

1

Set

Parts

Manf Session

1

Parts

Intake

Session Parts

1

Set

Set to Intake
Asset Parts Value

Format

☒ 1/4"

☐ MD

☐ CD

☐ DAT

Set Format

Entire Session -

Set Current

Spool as Master

Set

Activate

Setting Status

Images Req

Intake Hold

Intake Fail

Re-Intake



Archive Audio Recorder - Channel 1 V1_4_6_1

File setup

Ingest | Setup

Ingest Control

New/Open Tape No. PRM009120

LU Yes LU No Pass ATR 001596

7.5 ips 15 ips Fail REC

Record Stop Reset Re-Ing Remote

Timer 0 30Mins Time 00:25:57

Status: Tape / Sess

Title MIND IN SCIENCE

Series MIND IN SCIENCE

Manifest Duration 00:00:00 Prog No 3800934 QC Status Not Set

Issues: Reel Box Id Err Low Level Brown Shed Damaged Spt High Level Black Shed Splices Break Distorted White Shed Broken Auffed HF Loss Sticky Shed Stretched Dropout Loose Shed Creasing Oxide Loss Skews or Slaps Edge Damage Unstable Tone Squawling

Insert Timer TT

Ingestor's Notes

Intake Notes Save Cancel

QC Notes

Part 1 of 1 Intake Session Parts Set to 1 Intake Status Set to "Images Rec" by Marco Lave 22/10/2018 16:21:28

LogIn LogOff

Archive Audio Recorder - Channel 2 V1_4_6_1

File setup

Ingest | Setup

Ingest Control

New/Open Tape No. PRM009119

LU Yes LU No Pass ATR 001596

7.5 ips 15 ips Fail REC

Record Stop Reset Re-Ing Remote

Timer 0 30Mins Time 00:25:58

Status: Tape / Sess

Title PART 5

Series ED WALKS WITH MIKE HARDING

Manifest Duration 00:00:00 Prog No 5774998 QC Status Not Set

Issues: Reel Box Id Err Low Level Brown Shed Damaged Spt High Level Black Shed Splices Break Distorted White Shed Broken Auffed HF Loss Sticky Shed Stretched Dropout Loose Shed Creasing Oxide Loss Skews or Slaps Edge Damage Unstable Tone Squawling

Insert Timer TT

Ingestor's Notes

Intake Notes Save Cancel

QC Notes

Part 1 of 1 Intake Session Parts Set to 1 Intake Status Set to "Images Rec" by Marco Lave 22/10/2018 16:20:24

LogIn LogOff

Archive Audio Recorder - Channel 3 V1_4_6_1

File setup

Ingest | Setup

Ingest Control

New/Open Tape No. PRM009755

LU Yes LU No Pass ATR 001596

7.5 ips 15 ips Fail REC

Record Stop Reset Re-Ing Remote

Timer 0 30Mins Time 00:25:59

Status: Tape / Sess

Title LISTENING CORNER

Series LISTENING CORNER

Manifest Duration 00:00:00 Prog No 453663 QC Status Not Set

Issues: Reel Box Id Err Low Level Brown Shed Damaged Spt High Level Black Shed Splices Break Distorted White Shed Broken Auffed HF Loss Sticky Shed Stretched Dropout Loose Shed Creasing Oxide Loss Skews or Slaps Edge Damage Unstable Tone Squawling

Insert Timer TT

Ingestor's Notes

Intake Notes Save Cancel

QC Notes

Part 1 of 1 Intake Session Parts Set to 1 Intake Status Set to "Images Rec" by Peter Wilkinson 23/10/2018 15:18:40

LogIn LogOff

Archive Audio Recorder - Channel 4 V1_4_6_1

File setup

Ingest | Setup

Ingest Control

New/Open Tape No. PRM009756

LU Yes LU No Pass ATR 001700

7.5 ips 15 ips Fail REC

Record Stop Reset Re-Ing Remote

Timer 0 30Mins Time 00:25:33

Status: Tape / Sess

Title BIG AND LITTLE (PART 1) SERIES NO.

Series LISTENING CORNER

Manifest Duration 00:00:00 Prog No 463660 QC Status Not Set

Issues: Reel Box Id Err Low Level Brown Shed Damaged Spt High Level Black Shed Splices Break Distorted White Shed Broken Auffed HF Loss Sticky Shed Stretched Dropout Loose Shed Creasing Oxide Loss Skews or Slaps Edge Damage Unstable Tone Squawling

Insert Timer TT

Ingestor's Notes

Intake Notes Save Cancel

QC Notes

Part 1 of 1 Intake Session Parts Set to 1 Intake Status Set to "Images Rec" by Peter Wilkinson 23/10/2018 15:31:37

LogIn LogOff

Archive Audio Recorder - Channel 5 V1_4_6_1

File setup

Ingest | Setup

Ingest Control

New/Open Tape No. PRM009455

LU Yes LU No Pass ATR 001596

7.5 ips 15 ips Fail REC

Record Stop Reset Re-Ing Remote

Timer 0 30Mins Time 00:25:32

Status: Tape / Sess

Title GRANTHAM

Series FAT MAN OUT

Manifest Duration 00:00:00 Prog No 360000 QC Status Not Set

Issues: Reel Box Id Err Low Level Brown Shed Damaged Spt High Level Black Shed Splices Break Distorted White Shed Broken Auffed HF Loss Sticky Shed Stretched Dropout Loose Shed Creasing Oxide Loss Skews or Slaps Edge Damage Unstable Tone Squawling

Insert Timer TT

Ingestor's Notes

Intake Notes Save Cancel

QC Notes

Part 1 of 1 Intake Session Parts Set to 1 Intake Status Set to "Images Rec" by Mark Osborn 23/10/2018 10:45:51

LogIn LogOff

Status: Tape / Sess

Title

Series

Manifest Duration Prog No QC Status

Issues:

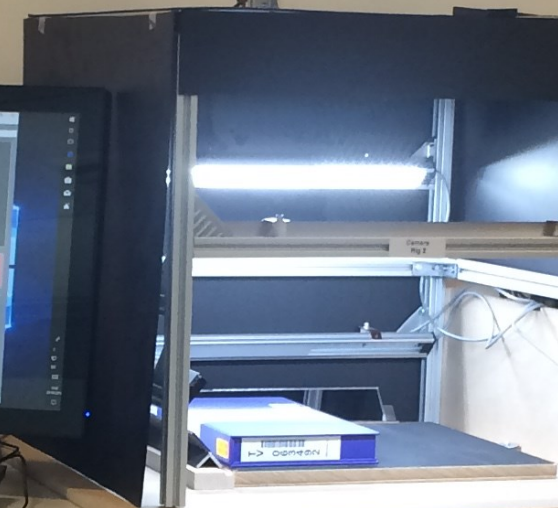
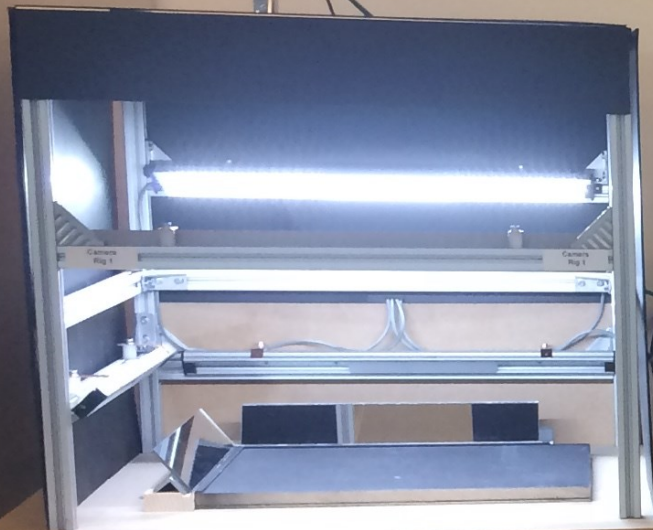
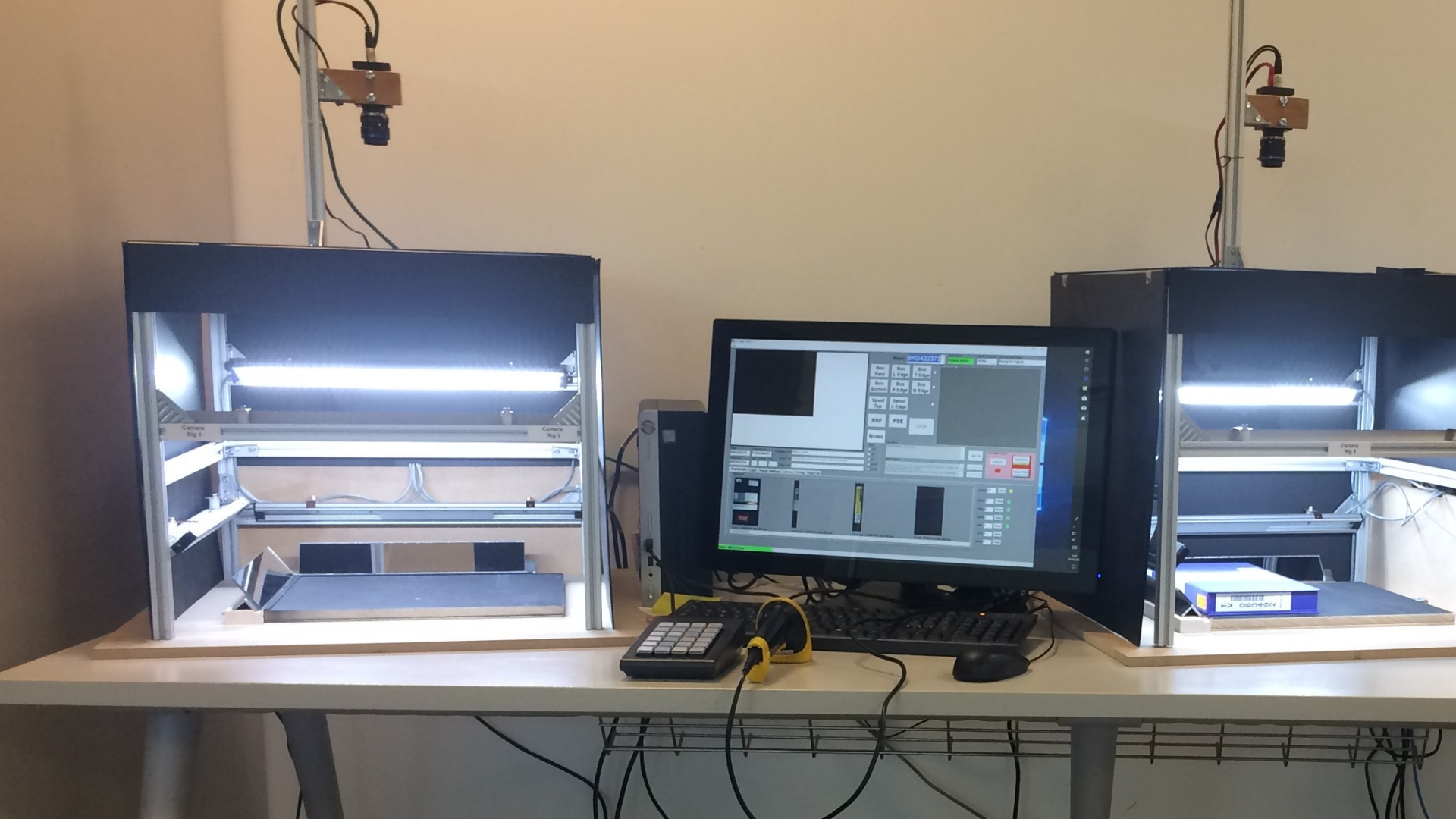
Session / Parts

of

Ingestor's Notes

Reel Box Id Er	Low Level	Brown Shed
Damaged Sp'l	High Level	Black Shed
Splices Break	Distorted	White Shed
Broken	Muffled HF Loss	Sticky Shed
Stretched	Dropout	Loose Shed
Creasing	Oxide Loss	Slows or Stops
Edge Damage	Unstable Tone	Squealing

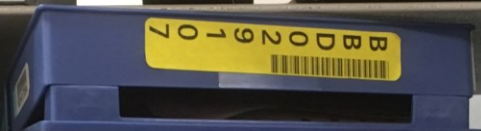
PHYSICAL SCANNING





BARCODES





RECORD 1

COMMENT 1



DELETE

CANCEL

STOP 1

COMPLETE 1





INGESTED



INGESTED



INGESTED

↑ 91-1-05

↑ 91-1-04

↑ 91-1-03

Rack
91

Medium	Storage Density (bits/cm ²)	Lifespan (years)
Stone	10	10,000
Paper	10,000	1000
Film	10,000,000	100
Disc	10,000,000,000	10

"Preserving Moving Pictures and Sound" Wright 2012

LOTS
OF
COPIES
KEEP
STUFF
SAFE

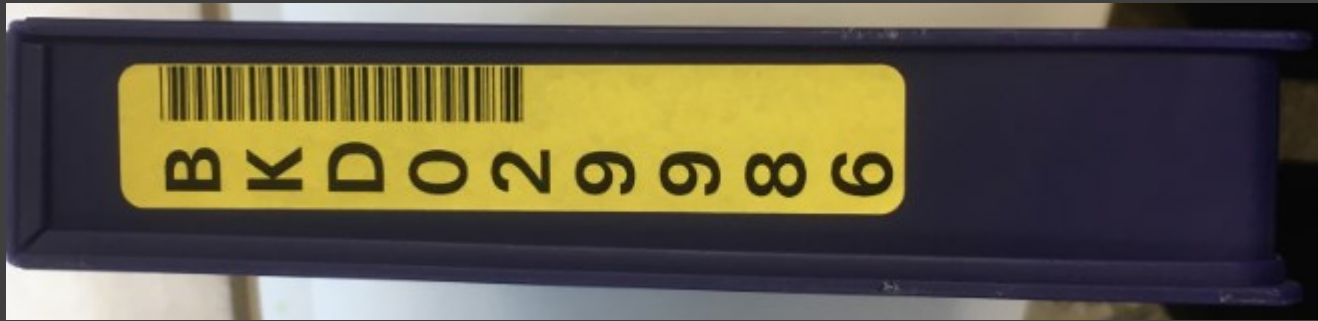


DIGITAL STORAGE

Assume an imperfect carrier

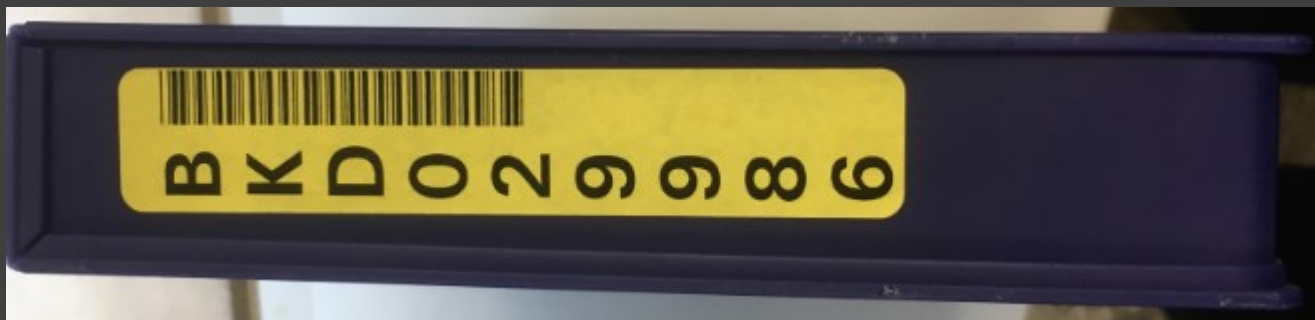
- If it moves, Checksum it
- If it doesn't move, Checksum it

FILENAMES



BKD029986.wav

FILENAMES



BKD029986_79054025255fb1a26e4bc422aef54eb4.wav



Exit



Turn left

Forward

Turn right

The Domesday Gallery



Help

Plan

Area

Move

Contents

Find



1986

Room 1006 60C102 Co-Processor

The 60C102 Co-Processor is a 16-bit microprocessor that is designed to work with the 60C100 Co-Processor. It is a 16-bit microprocessor that is designed to work with the 60C100 Co-Processor. It is a 16-bit microprocessor that is designed to work with the 60C100 Co-Processor.



LONG TERM



LONG TERM

Approach

The digitisation of selected videotapes will be carried out at BBC Archives' Odyssey Park facility in South Ruislip using workflow systems built in-house by BBC Archives. These use Telestream Lightspeed units to create the uncompressed master files, and FFMBC to create IMX50 files from these, which are then re-wrapped to AS11 DPP files using bmxtranswap.

BBC Archives have committed to a 'touch once' approach to the digitisation of these assets. This means each videotape digitisation should produce:

- A preservation quality digital copy of the videotape as Uncompressed 10-bit YUV 720x576 (v210) Quicktime (MOV) file with four 48kHz 24-bit uncompressed audio tracks. These uncompressed files are only stored on these LTO tapes.
- A broadcast quality digital copy of the videotape as an AS11 DPP MXF (720x608 IMX/D10 50Mbps with four channel 48kHz 24-bit audio) which will be imported to the BBC's Digital Archive (VizRT's Viz One MAM) resulting in these files being stored to a 2+1 storage level.
- Accompanying digital images of the physical asset, its packaging and any related VTR documentation that was enclosed within.

Clipping

The AS11 DPP MXF file will be clipped where possible to remove trailing black (or grey) and silence (with a 15 second handle) in order to minimise wastage of storage space in the BBC Digital Archive.

for the given track. This checksum was produced by mxfl2raw during extraction of the MXF file from LTO tape. The values of these checksums are not stored inside the MXF file.

This XML document was produced by analysing `D__37150401-LTA00089207.mxf.full_mxf_analysis.xml` .

`D__37150401-LTA00089207.mxf.full_mxf_analysis.xml`

This XML file contains the full details produced by using mxfl2raw to analyse the MXF file. Also refer to the summarised version of this XML file and its explanation.

`D__37150401-LTA00089207.mxf.md5`

This file contains the MD5 checksum for the entire MXF file. This checksum was produced by mxfl2raw during extraction of the MXF file from LTO tape. This means that it was produced by the same process that was also fully reading (and partially verifying) the MXF file. This checksum also appears in the XML files included in this collection.

`D__37150401-LTA00089207.mxf.sha1`

This file contains the SHA-1 checksum for the entire MXF file. This checksum was produced during the extraction of the MXF file

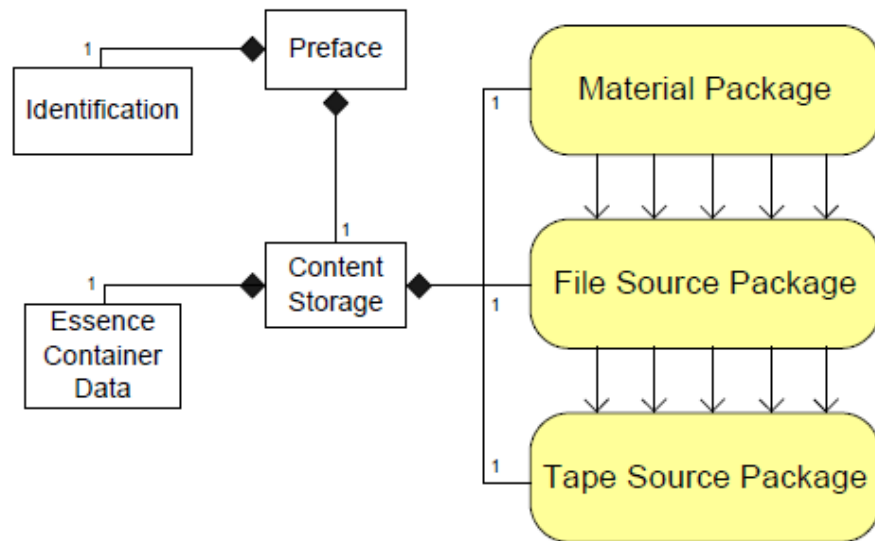


Figure 5 Preface and content storage packages

The Preface set contains two BBC extension items, D3P D3 Error Count and D3P PSE Failure Count, defined in Table 1. These count values are useful when reading a file from an LTO tape because the series of D3 VTR replay errors and PSE analysis failures are recorded in the footer section and are only available once the whole file has been transferred from the tape.

Name	Meaning	Type	UL
D3P D3 Error Count	Total number of D3 VTR replay errors	UInt32	06.0e.2b.34.01.01.01.01.0d.04.01.01.40.01.01.00
D3P PSE Failure Count	Total number of PSE analysis failures	UInt32	06.0e.2b.34.01.01.01.01.0d.04.01.01.40.01.02.00



Research & Development

White Paper

WHP 241

April 2013

A Guide to Understanding BBC Archive MXF Files

M. Glanville *and* T. Heritage

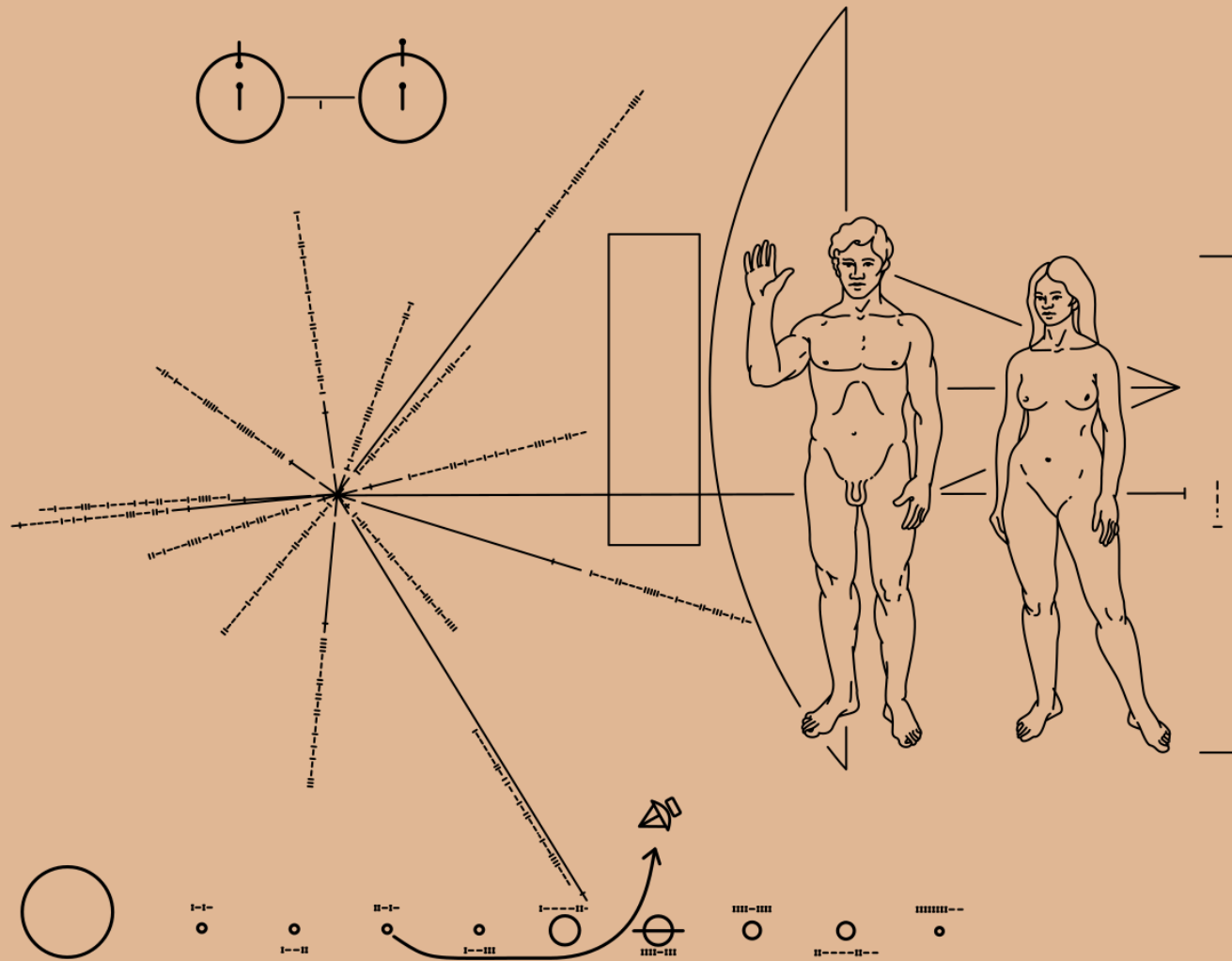

```

645 {
646     const MXFMCALabelIndex *mca_label_index = reader->GetMCALabelIndex();
647     map<uint32_t, vector<AudioChannelLabelSubDescriptor*> > c_labels;
648     map<UUID, SoundfieldGroupLabelSubDescriptor*> sg_labels;
649     map<UUID, GroupOfSoundfieldGroupsLabelSubDescriptor*> gosg_labels;
650     size_t i;
651     for (i = 0; i < sound_info->mca_labels.size(); i++) {
652         AudioChannelLabelSubDescriptor *c_label = sound_info->mca_labels[i];
653         BMX_CHECK(c_label->haveMCACHannelID());
654         c_labels[c_label->getMCACHannelID()].push_back(c_label);
655
656         if (c_label->haveSoundfieldGroupLinkID()) {
657             UUID link_id = c_label->getSoundfieldGroupLinkID();
658             MCALabelSubDescriptor *label = mca_label_index->FindLabel(link_id);
659             SoundfieldGroupLabelSubDescriptor *sg_label = dynamic_cast<SoundfieldGroupLabelSubDescriptor*>(label);
660             BMX_CHECK(sg_label);
661             sg_labels[link_id] = sg_label;
662
663             if (sg_label->haveGroupOfSoundfieldGroupsLinkID()) {
664                 vector<UUID> link_ids = sg_label->getGroupOfSoundfieldGroupsLinkID();
665                 size_t k;
666                 for (k = 0; k < link_ids.size(); k++) {
667                     UUID &link_id = link_ids[k];
668                     MCALabelSubDescriptor *label = mca_label_index->FindLabel(link_id);
669                     GroupOfSoundfieldGroupsLabelSubDescriptor *gosg_label = dynamic_cast<GroupOfSoundfieldGroupsLabelSubDescriptor*>(label);
670                     BMX_CHECK(gosg_label);
671                     gosg_labels[link_id] = gosg_label;
672                 }
673             }
674         }
675     }

```


capenumber	bbc.firsttxdate	bbc.firsttxservice	asset.materialtype	asset.siteidentit	bbc.programnumber	bbc.episodetitle
001	31/01/1995 00:00	BBC Two	prov	LLCF545T/71	LLCF545T/71	JIM TAVARE PICTU
000	04/03/1992 00:00	BBC One	prov	LTFC143S/72	LTFC143S/72	PRIMETIME
005	16/10/1993 00:00	BBC One	prov	LMAA855A/71	LMAA855A/71	DANNY BAKER AFT
001	29/10/1994 00:00	BBC Two	prov	LMBB717L/72	LMBB717L/72	THE LAST WORD
003	08/11/1993 00:00	BBC Two	prov	LMAV793T/01	LMAV793T/01	INSIDE VICTOR LE
002	30/12/1992 00:00	BBC Two	prov	LMAV740F/71	LMAV740F/71	TALKING REMBRAN
004	06/04/1994 00:00	BBC Two	prov	LMAA192X/71	LMAA192X/71	YOUNG MUSICIAN C
006	07/02/1984 00:00	BBC One	prov	LCHD311F/01	LCHD311F/01	GRANGE HILL:11
028	24/11/1978 00:00	BBC One	prov	LCHK040A/71	LCHK040A/71	JACKANORY:THE DR
030	25/01/1982 00:00	BBC One	prov	LCHJ144Y/71	LCHJ144Y/71	PLAYHOUSE:THE BL
082	07/01/1980 00:00	BBC One	prov	LCHJ043D/71	LCHJ043D/71	PLAYHOUSE:THE SJ
086	30/08/1981 00:00	BBC One	prov	LCHC127E/71	LCHC127E/71	SWAP SHOP'S SUMM
061	18/01/1982 00:00	BBC One	prov	LCHJ142K/72	LCHJ142K/72	PLAYHOUSE:THE UN
051	12/04/1985 00:00	BBC One	prov	LCHE501X/72	LCHE501X/72	WHIZZ:IN THE SHI
006	20/07/1983 00:00	BBC One Scotland	prov	LCHB093K/71	LCHB093K/71	BLUE PETER GOES
056	20/01/1982 00:00	BBC One	prov	LCHD235N/71	LCHD235N/71	THE STORY OF THE
012	06/04/1980 00:00	BBC One	prov	LCHC121P/71	LCHC121P/71	MULTI-COLOURED S
025	05/01/1983 00:00	BBC One	prov	LCHD045B/71	LCHD045B/71	CAPTAIN ZEP:SPAC
034	17/01/1979 00:00	BBC One	prov	LCHD003Y/71	LCHD003Y/71	THE STRANGE AFFA
054	30/05/1983 00:00	BBC One	prov	LCHC130L/71	LCHC130L/71	MIKE READ'S REPI
056	02/05/1983 00:00	BBC One	prov	LCHC129S/71	LCHC129S/71	MIKE READ'S REPI
036	08/04/1974 00:00	Unknown	prov	LCH2567S/01	LCH2567S/01	PLAY SCHOOL
029	05/06/1972 00:00	BBC One	prov	LCH2525P/01	LCH2525P/01	PLAY SCHOOL
032	25/05/1972 00:00	Unknown	prov	LCH9228Y/01	LCH9228Y/01	BLUE PETER
038	14/02/1974 00:00	Unknown	prov	LCH9339K/01	LCH9339K/01	BLUE PETER





BBC Archives

Securing the past for the future

steve.daly@bbc.co.uk

THE FUTURE

Brave new world = change is the only constant

Technology & Automation vs Skills & knowledge

Self serve

Role of archivist?

SO WHAT NEXT?

Digital preservation challenge

Retention of physical assets

Digitization is the first step

Opening up the archive is our goal

We want to share our collections with the people of Wales and beyond