

Media Preparation Bail Out Plan

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Objective

To discuss the Media Prep "Bailout" Plan, including the processes, successes and struggles, at the Texas Department of State Health Services Laboratory



Why the "bailout" plan?

- Media prep was not functioning efficiently
 - Employees were stressed out and unhappy
 - Customers were not satisfied



The problem

- Moved into a new lab facility
 - 4 times the capacity of the previous lab
 - Still working as if in the smaller lab
- New Laboratory Information Management system (LIMS)

Poor scheduling

The Solution

A review of the work flow

A review of the needs in the area



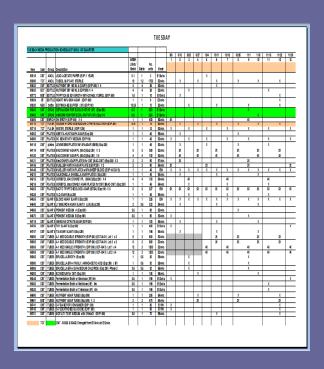
Phase I

- Compiled a list of itemized products
 - Time to produce
 - Preparation, production, QC and delivery
 - Type of product
 - Qualified staff

Phase II

Calendar

- Volume
- Frequency
- Expiration dates
- Storage requirements



12 Week Schedule

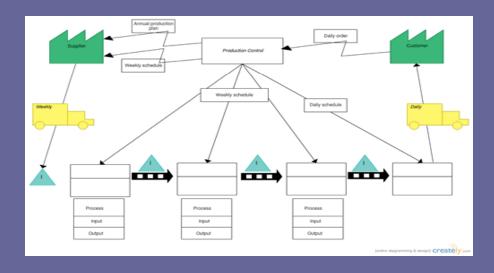
TUESDAY

							9/8	9/13	8/20	8/27	10/4	10/11	10/18	10/25	11/1	118	11/16	11/22	11
			WEEK				1	2	3	4	6	8	7	8	8	10	11	12	\Box
			Liters/	Ι.	No.	1													
9W	User	Group Description	Batch	Batch	units	Made													
016	CBT	ANCIL LEAD ACETATE PAPER (EXP:1 YEAR)	0.1	1	8	E12wks					X								Т
080	тет	ANCIL TUBES, SLIP CAP, STERILE	10	1.2	1728	E2wks	l	x		x		X		x		x	i	x	1
680	CMT	BOTTLE NUTRIENT BR 160 ML 8 (DAIRY) (EXP:4M) X 4	4	4	28	EBWks						X							\top
530	QCT	BOTTLE NUTRIENT BR 160 ML 8 (EXP:8M) X 4	4	4	28	EBwks			X								X		\top
772	MET	BOTTLE TRYPTICA SE SOY BROTH WITH 20%GLYCEROL (EXP: 8M)	1.8	1	10	E10wks		X										x	
806	BT	BOTTLE HEART INFU SION AGAR (EXP: 6M)	1	1	9	E8wks												X	Т
820	NB8	bottle BIOTNIDA SE BUFFER (SF) (EXP:1M)	10.25	1	13	E8wks			X			X			X			X	┸
086	CMT	DRUG CEF SULODIN FOR E.COLI 0167:H7 (8F) (Exp:8M)	0.6	1	260	E12wks									Х				
462	CMT	DRUG VANCOMYCIN FOR ECOLI 0167:H7 (8F) (Exp:1Y)	0.6	1	260	E12wks										X			/
680		ENRICH ON BROTH (EXP:4M) X 4	1	1	400	EBWks	4X								4X				Т
710	TCT	FLA 8K 80DIUM HYDRO XIDE/80DIUM CITRATE 80LUTION (EXP:2M)	13.6	1	18	E2wks		X		X		X		×		Х		X	
716	TCT	FLA 8K WATER, STERILE (EXP:12M)	1	1	12	E2wks	X		X		X		X		Х		X		
102	CMT	PLATES ABEYTA-HUNT BARK AGAR (Exp:2M)	1	1	45	⊞wks		X						X					
080	CBT	PLATES GC SENSITIVITY MEDIUM (EXP:1M)	1	1	45	E2wks	X		X		X		X		X		X		Г
116	CMT	plates LEVINE BNB PLATE 8 W1.6% AGAR (BNB) (Exp:2M)	1	1	45	E8wks		X			X			х			x		Т
119		PLATES MACCONKEY AGAR PL (MAC)(Exp:2M) X 8	8	8	380	E2wks	l	8X		8x	"	ax.		8X		8X		8X	1
120		PLATES MACCONKEY AGAR PL (MACKE 120) X 4	1 2	1 4	130	E2wks	l	4x		4x		44		4X		4X	i	4X	1
121		PLATES M acconker AGAR PLATES for CMT (MAC-CMT) (Exp-2M) X 2	2	2	80	E/wks		2X			\vdash	•			2X	•••			+
146		PLATES MUELLER HINTON AGAR PLATES (EXP2M) X2	2	2	80	E4wks	2X	-2^			2X				2X				+
148		PLATES MUELLER HINTON PLATES W/6%8HEEP BLOOD (EXP:14 DAYS)	1	1	46	EW	X	X	X	X	X	X	X	X	X	X	X	X	+
210		PLATES SALMONELLA SHIGELLA AGAR PLATES (Exp.2M)	 i	i	45	54wks		x	- ^			X				X			+
216		PLATES SORBTOL MACCONKEY PL (SMAC)(Exp:2M) X4	4	4	130	E4wks			4X				4X				4X		+
218		PLATES SORBITOL MacCONKEY AGAR PLATES for CMT(SMAC-CMT) (Exp:21	0 1	1	45	E4wks	l		x				X				×		1
102		PLATES BACTO TRYPTO SE BLOOD AGAR (BTBA) (Exp:1M) X 6	6	6	227	EW	EΧ	6X	6X	6X	EΧ	8K	6X	EΧ	EΧ	EΧ	6X	EΧ	+
326		PLATES XLD AGAR (Exp:2M)	1 4	1 4	45	E4wks	l		×				×	l			×		1
586	CBT	SLANT 8 BLOOD AGAR SLANT 8 (Exp:2M)	- i -	1 i	226	EW	X	X	X	X	X	X	X	X	X	X	X	X	+
840	CBT	SLANT 8 LY SINE IRO N AGAR SLANT 8 (LIA) (Exp:2M)	2	0.5	322	E4wks		x		"	"	x				X	1		1
886	CBT	SLANT 8 PIGMENT MEDIUM A (Exp.SM)	0.6	1	80	EBwks								х					+
			_	1	80		x				-			^	x				+
870	CBT	8LANT 8 PIGMENT MEDIUM B (Exp:8M)	0.6	_		EBwks			_		-				Х.				╆
716	CBT	BLANT 8 8M MO N8 CITRATE AG AR (EXP:2M)	1	1	100	E4wks		X				X				X			+
730	CBT	BLANT 8 TGY SLANT 8 (Exp:8M)	1	1	400	E12wks	×							l			i		1
747	CMT	SLANTS TSIAGAR SLANTS(Exp:2M)	1	1	188	E4wks		X				X		l		X	i		1
000	CMT	TUBES A-1 MED DOUBLE STRENGTH (EXP:SM) (OCT-MAY) Lot 1 x 2	8	2	800	E2wks						2X		2X		2X		2X	1
000	CMT	TUBES A-1 MED DOUBLE STRENGTH (EXP:SM) (OCT-MAY) Lot 2 x 2	8	2	800	E2wks						2X		2X		2X		2X	
006	CMT	TUBES A-1 MED SINGLE STRENGTH (EXP:SM) (OCT-MAY) Lot 1 x4	12	2	1200	E2wks					4X		4X		4X		4X		\perp
006	CMT	TUBES A-1 MED SINGLE STRENGTH (EXP:SM) (OCT-MAY) Lot 2 x 4	12	2	1200	E2wks					4X		4X		4X		4X		
066	CBT	TUBES BRUCELLA BROTH (Exp: 2M)	1	0.5	30	EBwks.			X					l	X		i		1
080	CBT	TUBES BRUCELLA BRW/196GLY, AMINOACETIC ACID (Exp:2M) (3F)	1	0.6	30	EBwks			X						X				\perp
086	CBT	TUBES BRUCELLA BR w/3.6% SODIUM CHLO RIDE (Exp:2M) Phase 2	0.6	0.5	30	EBwks			X						X				Г
200	CMT	TUBES EC MEDIUM for CMT (Exp:3M)	1	1	125	⊞wks				X						х			Т
846	CBT	TUBES Fermentation Broth w/ Mannose (SF) 6m	0.6	1	188	E12wks	X												\top
860	CBT	TUBES Fermentation Broth w/ Melibiose (3F) 8m	0.6	1	188	E12wks											x		Т
180	CBT	TUBES Fermentation Broth w/ Trehalose (SF) 6m	0.6	1	188	E12wks											X		\top
890	CBT	TUBES NUTRIENT AGAR TUBES (Exp.SM)	1	1	286	E4wks				x	\vdash			x			^	x	+
891	MET	TUBES NUTRIENT AGAR TUBES (Exp.SM) X 2	2	2	286 670	E4wks	-	\vdash		2X	\vdash			2X					+
741	CMT	TUBES O-FBASEFOR CONSUMER (EXP: SM)	- Z	4	88	E11W	×			27.	\vdash			20.				2X V	+
742	CMT	TUBES IO-FEASEFOR CONSUMER (EXP: SM)	- 	 	88	E11W	Ŷ	\vdash		\vdash	\vdash						$\overline{}$	Ŷ	+
761	CMT	TUBES MOTILITY TEST MEDIUM with 3%NaCl (EXP. 6M)	0.6	l i	70	EBwks	-				\vdash	X						X	+
				-			_	-		-	-						$\overline{}$		+

Phase III

Met with customers

Assessed the differences



The findings

Employee hours needed modification to accommodate preparatory work

 The 12 week schedule for media storage was based on capacity of old lab

Duplicate production efforts

Production of some media no longer needed

Phase IV

Inventory of products needed to increase volume production

OOLE PAPER OTASSIUM CYANIDE BROTH BASE EMBRANE FILTRATION RINSE FLUID MOGLIBIN 2% ERFLAVRIO 3% LIDDRIC ACID 0 5%	Applicator wood, plan 0" Applicator wood, plan 10" Dimethysamino Benzatisetyde METHANOL METHANOL APPLICATION FROTEOSE PERFONE #A - BD Sodium Dihoride, acu 2,5 kg SODIUM PHOSPHATE DIABASICANHYDROUS POTASSILIM PHOSPHATE BIONOGRASIC. TDH HANGESLIM DIACORDE SOLUTION HEMOGLOBIN - OX OID HEMOGLOBIN - OX OID HEMOGLOBIN - OX OID ANT FOAM	DSHS SIGMA FISHER VWR BD ACROS MALL INCK FISHER DSHS DSHS OXOID		500 4000 2500 500 1000 500 500	4 4 4 8 8
OTASSIUM CYANIDE BROTH BASE EMBRANE FILTRATION RINSE FLUID MOGLIBN 2% RIFLAVN 0.5%	METHANO, HOSPHORICA GLD PHOSPHORICA GLD PHOSPHORICA SOULM PHOSPHORICA SOULM PHOSPHORICA SOULM PHOSPHORICA SOULM PHOSPHORICA MOSPHORICA MOSPHORI	FISHER VWR BD ACROS MALL INCK FISHER DSHS DSHS DSHS		4000 2500 500 1000 500	4 4 4 8 8
OTASSIUM CYANIDE BROTH BASE EMBRANE FILTRATION RINSE FLUID MOGLIBRI 2% RIFLAVIN 0.5%	PHOSPHORIC ACID PROTOSSE PERONE #3-8D Sodium Chloride, aca 2.5 fg Sodium PHOSPHATE DIBASIC ANHYDROUS SODIUM PHOSPHATE BIONIOSASIC TOH PHOSPHATE MONIOSASIC TOH PHOSPHATE MONIOSASIC TOH REMO GLOBIN-OXOID REMO GLOBIN-OXOID ANT FOAM	VWR BD ACROS MALLINCK FISHER DSHS DSHS DXOID		2500 500 1000 500	4 4 8 8
TA SSIUM CYANDE BROTH BASE MBRANE FILTRATION RINSE FLUID MOGLIBIN 2% RIFLAVIN 0.5% LIDDRIC ACID 9.5%	PROTECSE PERTONE #8 - BD SODIUM POINTED, exa 2.5 19 SODIUM PHOSPHATE DIBASIC ANN/DROUS POTASSIUM PHOSPHATE DIBASIC ANN/DROUS POTASSIUM PHOSPHATE MONOBASIC-TOH PHOSPHATE BUFFER STOCK SOLUTION MAGNESIUM CHORICE SOLUTION 3.8% HEMOGLOBIN-OXOID	BD ACROS MALLINCK FISHER DSHS DSHS DSHS		500 1000 500	8 8
EMBRANE FILTRATION RINSE FLUID MOGLIBIN 2% ERIFLAV IN 0.5% LUDIXIC A CID 0.5%	Sodium Chloride, acs. 2.5 kg SODILM PHOSPHATE DIBASIC ANHYDROUS POTASSIUM PHOSPHATE MONOBASIC-TDH PHOSPHATE BUFFER STOCK SOLUTION MAGNESUM CHLORIDE SOLUTION 3.8%, HEMOGLOBIN - OXOID ANTIFOAM	ACROS MALLINCK FISHER DSHS DSHS OXOID		1000 500	0000
EMBRANE FILTRATION RINSE FLUID MOGLIBIN 2% REFLAVIN 9.5% LIDDRIC ACID 9.5%	SODIUM PHOSPHATE DIBASIC ANYTOROUS POTASSIUM PHOSPHATE MONOBASIC-TDH PHOSPHATE BUFFER STOCK SOLUTION MAGNESIUM CHLORIDE SOLUTION 3.8% HEMO GLOBIN - OXOID ANTIFOAM	MALL INCK FISHER DSHS DSHS OXOID		500	8
MBRANE FILTRATION RINSE FLUID MOGLIBIN 2% RIFLAV IN 0.5% LIDIXIC ACID 0.5%	POTASSIUM PHOSPHATE MONOBASIC-TOH PHOSPHATE BUFFER STOCK SOLUTION MAGNESIUM CHLORIDE SOLUTION 3.8% HEMOGLOBIN - OXOID ANTIFOAM	FISHER DSHS DSHS OXOID			8
EMBRANE FILTRATION RINSE FLUID MOGLIBIN 2% RIFLAVIN 0.5% LIDIXIC ACID 0.5%	PHOSPHATE BUFFER STOCK SOLUTION MAGNESIUM CHLORIDE SOLUTION 3.8% HEMOGLOBIN - OXOID ANTIFOAM	DSHS DSHS OXOID		500	
MOGLIBIN 2% RIFLAV IN 0.5% LIDIXIC ACID 0.5%	MAGNESIUM CHLORIDE SOLUTION 3.8% HEMOGLOBIN - OXOID ANTIFOAM	DSHS OXOID			- 8
MOGLIBIN 2% RIFLAVIN 0.5% LIDIXIC ACID 0.5%	HEMOGLOBIN - OXOID ANT IFOAM	OXOID		7	36
RIFLAVIN 0.5% LIDIXIC ACID 0.5%	ANTIFOAM			30	36
RIFLAV IN 0.5% LIDIXIC ACID 0.5%				500	24
LIDIXIC ACID 0.5%		BAKER		1000	24
	ACRIFLAVIN HYDROCHLORIDE	SIGMA		100	12
	NALIDIXIC ACID	SIGMA		100	16
	CYCLO HEX IM IDE FRO M ICROBIAL SOURCE	SIGMA		5	16
	ALCOHOL. ANHYDROUS REAGENT (ABSOLUTE ALCOHOL)	BAKER		500	16
MAN EMPIRIL PROTUMULORSE DI COD	BOLTON BROTH	OVOID		E00	16
					16
					16
					16
			_		12
			_	7.5	14
				1.00	9
					4
					24
			ì		24
					24
					24
				4	24
	ACRIFLAVIN 0.5%	DSHS		2	24
	CYCLOTIEXAMIDE 1%	DSHIS		2	24
RDET GENGOU BLOOD A GAR PLATES	BORDET GENGOU AGAR BASE - BD	DIFCO		500	24
	GLYCERIN (GLYCEROL) - EM			4000	24
					24
	CAMPYLOBACTER BLOOD FREE SELECTIVE AGAR BASE	OXOID		500	52
	Yeast Extract ALPHA	ALPHA		500	52
	SODIUM CEFOPERAZONE - TRC	TRC		50	52
•	•	-			
	TERPELD'S PHASE BUFFER TTERFELD'S PHASE BUFFER THERFELD'S PHASENETE BUFFER LENTE ENRICHMENT BROTH PS-BUFFERED LISTERIA ENRICHMENT ROET GENGOU BLOUD A GAR PLATES MPYLOBACTER ISO. AGAR (CN)	TIERFELD'S PHOSPHA TE BUFFER BUTTERRECHEMENT BROTH SELBITE BROTH BASS (OXOID) - OXOID SODIUM BISELENTE - OXOID WASH GENERAL PIPA MOPS (MAHORPHOLINO) ACID WASH GENERAL PIPA MALDINIC ACID 0.5% ACRIFICATION 0	LAKED HORSE BLOOD SOLTON BROTH SELECTIVE SUPPLEMENT OXIOD SOLTON BROTH SELECTIVE SUPPLEMENT OXIOD OXIOD OXIOD OXIOD OXIOD SELEMITE SUPPLEMENT SOLID BROTH SELECTIVE SUPPLEMENT SOLID BROTH SELECTIVE SUPPLEMENT SOLID BROTH SELEMINE SUPPLEMENT SOLOR SOLUTION OXIOD OXIOD	LAKED HORSE BLOOD BOLTON BROTH SELECTIVE SUPPLEMENT BOLTON BROTH SELECTIVE SUPPLEMENT OXOD DISHS BUT TERRELD'S PHOSPHATE BUFFER BUT TERRELD'S PHOSPHATE BUFFER TITCHNE'LD'S PHOSPHATE BUFFER BUT TERRELD'S PHOSPHATE BUFFER SOULD'S BUTFER SCHOOL SOULTION OXOD OXOD	LAKED HORSE BLOOD

Master Inventory List

	PRODUCT	REAGENTS	VENDOR	CAT#	QTY	#
90000	APPLICATOR STICKS,	Applicator wood, plain 6"	DSHS		20000)
90010	INDOLE PAPER	p-Dimethylamino Benzaldehyde	SIGMA		500)
		METHANOL	FISHER		4000	
		PHOSPHORIC ACID	VWR		2500	000
90650	POTASSIUM CYANIDE BROTH BASE	PROTEOSE PEPTONE #3 - BD	BD		500	
		Sodium Chloride, acs, 2.5 kg	ACROS		1000	
		SODIUM PHOSPHATE DIBASIC ANHYDROUS	MALLINCK		500	
		POTASSIUM PHOSPHATE MONOBASIC-TDH	FISHER		500	
91190	MEMBRANE FILTRATION RINSE FLUID	PHOSPHATE BUFFER STOCK SOLUTION	DSHS		7	1
		MAGNESIUM CHLORIDE SOLUTION 3.8%	DSHS		30	
92360	HEMOGLIBIN 2%	HEMOGLOBIN - OXOID	OXOID		500	
		ANTIFOAM	BAKER		1000	
93465	ACRIFLAVIN 0.5%	ACRIFLAVIN HYDROCHLORIDE	SIGMA	_	100	
93475	NA LIDIXIC ACID 0.5%	NALIDIXIC ACID	SIGMA	_	100	
	CYCLOHEXIMIDE 1%	CYCLO HEX IM IDE FRO M ICROBIAL SOURCE	SIGMA	 	- 5	5
00.00	or dediterantee 177	ALCOHOL, ANHYDROUS REAGENT (ABSOLUTE ALCOHOL)	BAKER		500	
		, , , , , , , , , , , , , , , , , , ,	 	_	_	+
93520	CAMPY ENRICH BROTH W/HORSE BLOOD		OXOID		500	
		LAKED HORSE BLOOD	REMEL		100	
		BOLTON BROTH SELECTIVE SUPPLEMENT	OXOID		10	
		ETHANOL (190 PROOF)	DSHS		4000	
~~~~	BUTTERFIELD'S PHOSPHATE BUFFER	BUTTERFIELD'S PHOSPHATE BUFFER STOCK SOLUTION	DSHS		2.5	
93530	BUTTERFIELD'S PHOSPHATE BUFFER	BUTTERFIELD'S PHOSPHATE BUFFER STOCK SOLUTION	DSHS		7.5	
93600	SELENITE ENRICHMENT BROTH	SELENITE BROTH BASE (OXOID) - OXOID	OXOID		100	
		SODIUM BISELENITE - OXOID	OXOID		100	
93660	MOPS-BUFFERED LISTERIA ENRICHMENT		CRITERION	N.	500	
		MOPS (N MORPHOLINO) ACID	SIGMA	1	250	
		MOPS (SODIUM SALT)	SIGMA		250	
		Yeast Extract ALPHA	ALPHA		500	
		NALIDIXIC A CID 0.5%	DSHS		4	4
		ACRIFLAVIN 0.5%	DSHS		2	2
		CYCLO HEXAMIDE 1%	DSHS		2	2
94035	BORDET GENGOU BLOOD A GAR PLATES		DIFCO		500	
	1	GLYCERIN (GLYCEROL) - EM	FISHER		4000	
		BLOOD, STERILE DEFIBRINATED SHEEP 50 ML/BTL - DSHS	DSHS		50	
		CAMPYLOBACTER BLOOD FREE SELECTIVE AGAR BASE	OXOID		500	
94050	CAMPYLOBACTER ISO. AGAR (CIA)			1		
94050	CAMPYLOBACTER ISO. AGAR (CIA)	Yeast Extract ALPHA SODIUM CEFOPERAZONE - TRC	ALPHA TRC		500 50	_

#### Phase V

Notify customers of changes

Modify production schedule

#### Phase VI

- Trial Run
  - Adjustments made to schedule
  - Done in increments to evaluate
    - Month one
    - Month three
    - Month six

## Phase VII

Go Live!

#### The Results

Employee hours were modified to accommodate prep work

Skeleton crew work schedule implemented

Produce larger quantities less frequently

Standardize recipes where applicable

# Savings

 Decrease units produced every 12 weeks by 17.5% (from 1026 units to 846)

 Cost savings for reagents approximately \$2000/12 weeks

 Overtime staff costs reduced by approximately \$2448/12 weeks

# The Most Important Result





# The Biggest Struggle

Getting people to believe in the changes and the processes

#### **Current State**

- The Media Prep area is short staffed
  - 3 people have left
- In the same situation as when this was first implemented



# Special Thanks

- Miriam Johnson
- Miguel Garza
- Miriam Udoye
- Eugene Atwood
- Natalie Hale
- Mark Mergen
- Tabitha Carolina

