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MCB CAMP LEJUENE
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CHRONOLOGY OF IDENTIFICATION OF POTENTIAL WATER CONTAMINATION SOURCES
MCB CAMP LEJEUNE NC
2/26/1985
DEPARTMENT OF THE NAVY

CHRONOLOGY

- Summer 84 NACIP sampled 22 wells identified as potential problems due to proximity.
 - 30 Nov 84 Received results (ESE study). Well 602 positive for benzene. 602 was shut down and resampled.
 - 4 Dec 84 Sampled Hadnot Point Water Plant (HP) raw and treated water, plus wells 601, 603, 608, 634, 637 and 642 because of their proximity to 602.
 - 6 Dec Received test results (Table [1]). Wells 601; 602, 608, raw and treated water positive for Trichloroethylene (TCE), trans-1,2-Dichloroethylene (DCE), and Tetrachloroethylene (PCE). Wells 602 and 608 also showed other Volatile Organic Chemicals (VOCs). Wells 601 and 608 were shut down.
 - 10 Dec Sampled HP treated water, plus Wells 601, 602, 608, 634, 637 and 642
 - 13 Dec Took Quality Control (QC) samples of 602, split three ways.
 - 13-19 Dec Took daily samples of HP raw water.
 - 14 Dec Received results of 10 Dec 84 sampling (Table [2]). Treated water levels dropped. Wells 634 and 637, previously showing nothing, showed significant levels of Methylene Chloride(MC). 634 and 637 were shut down.
 - 19 Dec Took a distribution sample from HP. Location was FC-540, far point from plant.
 - 21 Dec Received results of daily HP samples (Table [3]), plus JTCs QC sample and FC-540. The QC samples from JTC and Grainger (received later) confirmed the presence of TCE and DCE.
 - 16 Jan 85 Sampled all operating wells for HP and Holcomb Blvd Water Plant (HB). 37 wells.
 - 23 Jan Sampled all operating wells for Onslow Beach (OB), Court-house Bay (CHB), Camp Johnson (CJ) and Tarawa Terrace (TT) water plants. 21 wells.
 - 27 Jan Base Chief of Staff detected gasoline smell in water in quarters, serviced by Holcomb Blvd plant and reservoir.
 - 27 Jan Reservoir flushed initially. Later, drained reservoir, shut-down HB plant, scrubbed reservoir with high pressure hoses. Housing areas and mainside are now being served by HP.
 - 29 Jan Sampled all operating wells for Marine Corps Air Station-New River (MCAS) and Rifle Range (RR). 25 wells.
- Sampled finished water at HB (plant still shut down). Sampled

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Chief of Staff quarters (now being served with HP).

- 31 Jan 85 Received results of 29 Jan 85 sampling (Table [4]).
- Sampled finished water at HP distribution pump, HB reservoir, and points in Paradise Pt and Berkeley Manor housing areas (still served by HP).
- 1 Feb 85 Samples delivered to State Laboratory. Analysis run on most samples (finished 4 Feb 85)
- 4 Feb Received results of 16 Jan 85 Well sampling (Table [5]). Wells 602, 608, and 645 were broken. Wells 634 and 651 show significant levels of TCE, DCE, PCE, and Vinyl Chloride. Wells 652 and 653 showed trace amounts of TCE. Well 651 was shut down.
- Received results of 31 Jan 85 sampling (Table [6]).
- The following wells were sampled: 602, 608, 610, 654, 645, 649 and two samples at 651.
- Reactivated HB. Began flushing entire distribution systems served by both HB and HP.
- 5 Feb A treated sample from HP, HB, TT, CJ, MCAS was taken. Wells 203 and 191 at MCAS were resampled.
- 6 Feb The 4 & 5 Feb 85 sampling were shipped to JTC.
- 7 Feb Sampled raw and finished water at both plants and two samples from HB distribution system.
- Received results of 23 Jan 85 Well sampling (Table [7]).
- 8 Feb Received results of 15 wells of the 29 Jan 85 sampling (Table [8]). Received results of 7 Feb 85 sampling (Table [9]).
- Received results of the duplicate sampling of 651 on 4 Feb 85, (Table [10]).
- 12 Feb Resampled TT plant, TT-26, and TT New Well
- Received results of HP and TT plant sampling on 5 Feb 85, (Table [11]).
- 14 Feb Received results of TT resampling on 12 Feb 1985, (Table [12]).
- 19 Feb Resampled TT plant, TT-26 and TT New Well, split two ways.
- 20 Feb Sampled treated water at OB, CHB, RR. Sampled Well M-168 at CJ. Resampled CHB new well. Shipped one TT set from 19 Feb 85 to State Lab. Shipped 20 Feb 85 samples to JTC.

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21 Feb 85 Shipped other TT set from 19 Feb 85 to JTC.

Resampled HP and HB treated, BM-5400 and hydrant at MOQ 2204;
and sampled Bldg 65 lab with Mike Bell from State.

22 Feb Received results of 19 Feb 1985 sampling run by State Laboratory (Table [13]).

25 Feb Received results of 19 Feb 85 sampling run by JTC (Table [13]).

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Abbreviations for Following Tables

Trans-1,2-Dichloroethylene	DCE
Tetrachloroethylene (Perchloroethylene)	PCE
Trichloroethylene	TCE
Benzene	B
1,1-Dichloroethylene	11D
Toluene	T
Vinyl Chloride	VC
Methylene Chloride	MC
None Detected	ND

Notes for Following Tables

1. Results from hard copy in LANTNAVFACENGCOM LTR of 8 Jan 1985 (Not from PHONCON) received NREAD 11 Feb 85.
2. Results from hard copy received 11 Feb 85 from State Laboratory.
3. Results from hard copy in LANTNAVFACENGCOM LTR of 12 Feb 85 (Not from PHONCON) received NREAD 15 Feb 85.
4. Results from hard copy in LANTNAVFACENGCOM LTR of 14 Feb 85 (Not from PHONCON) received NREAD 19 Feb 85.
5. Results from hard copy in LANTNAVFACENGCOM LTR of 19 Feb 85 (Not from PHONCON) received NREAD 21 Feb 85.

All results are reported in parts per billion (ppb)

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TABLE [1]

LAB: JTC Sampled: 4 Dec '84 Detection Limit: 10ppb

Sample Point	DCE	PCE	TCE	B	11D	T	VC	THM
HP Treated	83	3.9	200	ND	ND	ND	ND	P
HP Raw	15	ND	46	↕	↕	↕	↕	P
601	88	5.0	210	ND	ND	ND	ND	
602 (11/30/84)	630	24	1600	120	2.4	5.4	18	
603	ND	ND	ND	ND	ND	ND	ND	
608	5.4	↕	11.0	3.7	↕	↕	↕	
634	ND	↕	ND	ND	↕	↕	↕	
637	↕	↕	↕	↕	↕	↕	↕	
642	ND	ND	ND	ND	ND	ND	ND	

See Note 1.

TABLE [2]

LAB: JTC Sampled: 10 Dec 84 Detection Limit: 10ppb

Sample Point	DCE	PCE	TCE	B	MC	THM
601	99	ND	230	ND	10	
602	380	↕	540	720	ND	
603	ND	↕	ND	ND	7.0	
608	2.4	↕	13	4.0	14	
634	2.3	↕	ND	ND	130	
637	ND	↕	↕	↕	270	
642	ND	↕	ND	↕	38	
HP Treated	2.3	ND	2.3	ND	ND	P

See Note 1.

TABLE [3]

Hadnot Point Raw Water

LAB: JTC Detection Limit: 10ppb

Sample Point	DCE	PCE	TCE	MC	THM
12/4/84	15	ND	46	ND	P
12/13/84	ND	↕	ND	54	P
12/14/84	↕	↕	↕	ND	P
12/15/84	↕	↕	↕	↕	P
12/16/84	↕	↕	↕	↕	P
12/17/84	↕	↕	↕	↕	P
12/18/84	↕	↕	↕	↕	P
12/19/84	ND	ND	ND	ND	P
12/19/84(FC540)	ND	ND	1.2	ND	P

See Note 1.

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TABLE [4]

LAB: NC State Sampled: 29 Jan 85 Detection Limit: 50ppt

<u>Sample Point</u>	<u>TCE</u>	<u>EDB</u> (Ethylene dibromide)
HB Before Reservoir	339.8	ND
HB After Reservoir	8.2	↓
MOQ 2212	1040.9	ND
Gas Sample	ND	

See Note 2.

Table [5]

LAB: JTC Sampled: 16 January 1985 Detection Limit: 10ppb

<u>Well</u>	<u>DCE</u>	<u>TCE</u>	<u>PCE</u>	<u>VC</u>	<u>11D</u>
601	8.8	26	ND	ND	ND
634	700	1300	10	6.8	ND
651	3400	3200	386	655	187
652	ND	9.0	ND	ND	ND
653	ND	5.5	ND	ND	ND

<u>None Dectected:</u>	603	632	642	<u>Broken Samples:</u>	602
	606	633	643		608
	609	635	644		645
	611	636	646		651
	613	637	647		
	614	638	648		
	616	639(OLD)	650		
	620	639(NEW)	655		
	621	640	LCH 4007		
	627	641			

See Note 3.

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TABLE [6]

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 DIVISION OF HEALTH SERVICES
 OCCUPATIONAL HEALTH LABORATORY

COMPANY: Camp Lejeune Water System
 ADDRESS: Camp Lejeune, Jacksonville, N.C.
 SERVICE REQUESTED: VOLATILE ORGANIC ANALYSIS
 SAMPLE TAKEN ON: 1/31/85
 SAMPLE TAKEN BY: Betsy Betz
 SUBMITTED TO LABORATORY: 2/1/85
 SUBMITTED BY: Betsy Betz

DATE OF ANALYSIS: 2/1-4/85
 ANALYSED BY: John L. Neal

DATE REPORTED: 2/4/85

RESULTS IN PPB (ug/liter)

<u>LOCATION</u>	<u>DICHLOROETHYLENE</u>	<u>TRICHLOROETHYLENE</u>
Bldg 20	321.3	900.0
Bldg 670 Bottom	7.4	24.1
MOQ 2212 Cold Water	249.4	724.6
Bldg 670 Top	7.6	26.8
MOQ 2212 Hot Water	201.2	612.9
Bldg 670 Middle	7.8	25.8
Tank SLCH 4004	107.5	318.3
Hydrant MOQ 2204	307.6	839.7
Hydrant Elev. Tank S-830	340.0	849.0
Tank S-2323	159.0	407.1
BM 5677	368.7	981.3
BM 5531	335.0	905.5
Bldg PP 2600	332.4	890.9
Bldg 5400	406.6	1,148.4

COMMENTS:

Also identified in all samples were chloroform, dichloromethane, and two (2) unidentified peaks possibly dibromomethane and bromoform. Total Trihalomethanes <<100.0 PPB.

REPORTED BY: John L. Neal

cc. Charles Rundgren, Water Supply Branch
 Mike Bell, ERO
 ✓ Fred Hill, ERO
 Environmental Epidemiology

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TABLE [7]
Well Analysis by JTC

Sampled: 23 Jan 85

<u>System</u>	<u>Well</u>	<u>DCE</u>	<u>TCE</u>	<u>PCE</u>	<u>VC</u>	<u>THM</u>
CHB	A-5	ND	ND	ND	ND	P
TT	TT-26	92	57	158	27	
TT	New	11	5.8	132	ND	

None Detected: BB-44 M-142 TT-25
 BB-220 M-192 TT-30
 BB-221 M-267 TT-31
 CHB New Well M-628 TT-52
 BA-164 M-629 TT-54
 BA-190 M-630 TT-67

See Note 4

TABLE [8]
Well Analysis by JTC

Sampled: 29 Jan 85

<u>Well</u>	<u>TCE</u>
4150	2.5

None Detected: 100 TC-1000 5001
 190 1001 5009
 201 1251 131
 325 1253 4140
 502 1254 RR-45
 504 1255 RR-47
 604 1256 RR-97
 700

See Note 5

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TABLE [9]

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
OCCUPATIONAL HEALTH LABORATORY

COMPANY: Camp Lejeune Water System
ADDRESS: Camp Lejeune, Onslow County
SAMPLE TAKEN ON: 02/07/85
SAMPLE TAKEN BY: J. Fred Hill
SUBMITTED TO LABORATORY: 02/08/85
SUBMITTED BY: J. Fred Hill, E. Betz

DATE OF ANALYSIS: 02/08/85
ANALYSED BY: John L. Neal, Vicki Painter

DATE REPORTED: 02/08/85

RESULTS IN PPB (ug/L)

<u>LOCATION</u>	<u>trans 1,2-DCE</u>	<u>CHCl3</u>	<u>DCBM</u>	<u>TCE</u>	<u>DBCM</u>
Bldg. 20 Res. Fin. Water	5.3	10.3	6.3	16.8	3.4
Bldg. 20 Filter Eff.#1	<2.0	6.8	4.3	<2.0	2.0
Bldg. 20 Filter Eff.#2	<2.0	9.1	5.7	3.4	3.4
Bldg. 20 Influent	<2.0	5.0	4.0	<2.0	1.5
Bldg. 670 Res. Fin. Water	<2.0	14.84	8.3	<2.0	3.6
Bldg. 670 Filter Eff.#1	<2.0	11.45	6.1	<2.0	1.2
Bldg. 670 Filter Eff.#2	<2.0	10.03	5.8	<2.0	1.2
Bldg. 670 Influent	<2.0	8.1	4.9	<2.0	1.7
MOQ 2204 Hydr. Dis. Sys.	9.0	23.92	10.74	32.4	4.5
Bldg. 5400 Ber. Man. Sch.	44.8	24.49	10.83	135.1	5.0

COMMENTS: trans 1,2-DCE is trans 1,2-dichloroethylene, CHCl3 is Chloroform, DCBM is dichlorobromomethane, TCE is trichloroethylene, and DBCM is dibromochloromethane. Samples analysed by purge and trap method utilizing Hall detector in the halogen mode.

REPORTED BY: John L. Neal

cc. Charles Rundgren, Water Supply Branch
Mike Bell, ERO
J. Fred Hill, ERO
Environmental Epidemiology

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TABLE [10]

Duplicates of 651

Sampled:	4 Feb 1985	LAB:	JTC
	#1		#2
DCE	7580		8070
PCE	400		397
TCE	18900		17600
VC	168		179

TABLE [11]

Sampled:	5 Feb 85	LAB:	JTC
	TCE	DCE	PCE
HP	429	150	ND
TT	12	ND	215

TABLE [12]

Sampled:	12 Feb 85	LAB:	JTC	
	PCE	TCE	DCE	B
TT-26	3.8	ND	ND	ND
TT New Well	37	1.8	1.9	6.5
TT Plant	ND	ND	ND	ND

See Note 5

Table [13]

Sampled: 19 Feb 85

	TT-Treated		TT-New Well		TT-26	
	State	JTC	State	JTC	State	JTC
DCE	ND	ND	Trace	13	Trace	9.5
PCE	ND	↑	26.17	ND	55.17	64
Benzene	NA	↓	ND	6.3	ND	ND
TCE	ND	ND	53.53	ND	3.91	4.1

NA=Not Analyzed

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Gas Chromatograph Summary

The pending orders with Perkin-Elmer were placed by P & C on 20 Feb 85. Perkin-Elmer promised delivery in three weeks (14 Mar 85). On 21 Feb 85 the Service Rep, who will install our GC, called. He stated that he would try to speed up the requisitions. He said as soon as the gas filters and driers came in to call him and make an appointment for installing GC (should not have to wait more than a week). As soon as we have an appointment for installation, then Perkin-Elmer will schedule the on-base training class.

Running Samples

Standards are on order from EPA.

Quality Control Check samples for certification are on order from the State of North Carolina.

When all is set up, using one technician, Seven samples a day could be analyzed. That would be the maximum the lab could run. That is not including collection. Seven samples a day would be starting with analysis at 0800. A hour a sample is the analysis rate. Only one sample can be run at a time. At least one standard a day should be run, taking an hour for it.

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Gas Chromatograph Status

Requirements for Installation .

1. Ventilation - Completed by Base Maintenance on 7 Feb 85.
2. Gas Supplies
 - Safety Rack for Gas Cylinders - Built by Base Maintenance on 14 Feb 85.
 - Hole for Gas Lines - Finished by Base Maintenance on 19 Feb 85.
 - Gas Cylinders - Received from National Welders by 20 Feb 85.
 - Gas Regulators - Received from National Welders by 20 Feb 85.
 - Gas Filters 7 Drier - Ordered from Perkin-Elmer on 20 Feb 85 (Pending).
3. Electrical Supply - Installed by Base Maintenance on 13 Feb 85

Requirements for Operation

1. Flow Meter for regulating gas - Ordered from Perkin-Elmer on 20 Feb 85 (Pending).
2. Packed Columns, which are the sample reaction tubes that are specific for parameters - Ordered from Perkin-Elmer on 20 Feb 85 (Pending).

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