HOOKSETT
SEWER DEPARTMENT
DATE RECEIVED 9-17-18

INITIAL	COMMENTS

Hooksett Sewer Commission
Minutes
September 10, 2018

This meeting was called to order at 12:00pm. Present were Chairman Sidney Baines, Commissioner Frank Kotowski, Commissioner Richard Bairam, Superintendent Bruce Kudrick, Guy Beloin and Kim Langlois.

Approve and Sign Manifests

Approve August 20, 2018 meeting minutes: Commissioner Richard Bairam made motion to accept the August 20, 2018 minutes as read. Commissioner Frank Kotowski seconded, all in favor, the motion was carried unanimously.

Read Correspondence

Financial Report: Guy Beloin came in and gave a quick overview of the Sewer Commissions accounts.

Scheduled Appointments: 12:30pm TBuck progress meeting with Underwood RE: **Phase 3 Capital improvements**

TBuck/Underwood: Please see attached agenda minutes and meeting minutes written by Underwood Engineering

Superintendent's Report: Bruce passed out a Flow chart for the month of August (see attached). Bruce wanted the commissioners to see how he keeps track of the sewer flow and how the heavy rains that we had in August affected this.

There were two violations at the Plant for the month of August. The first violation was a B.O.D violation and the second was a Chlorine residual violation. All appropriate personnel have been notified regarding the violations.

Bruce received two bids for the Maintenance on the sewer lines on the bridge. The first was from E.D. Sweatt in the amount of $3600.00 and the second was from TBuck in the amount of $7800.00. It was Bruce's recommendation that the Commission go with E.D. Sweatt.

The motor on the newer De-grit system that was installed in 2010 went, so it was shut down and we are running the older De-grit system that Bruce has always maintained until the new motor comes in, which is on order and should be in next week.

Graves Engineering has two bids for the borings that need to be done for the main street pump station. One is from Miller Engineering in the amount of $6217.00 and the other is from John Turner Engineering which is around $500 dollars more. It is Don Graves recommendation that the Commission go with Miller Engineering to do the boring for the main street pump station.

Old Business: None

New Business: The commission is still waiting on the agenda minutes from Stantec for the last workshop meeting for August 20, 2018. The Commission will need to approve these minutes at the next meeting which is on September 17, 2018.

Next TBuck Progress meeting is scheduled for October 1, 2018 at 12:30pm

Non Public Session: Not Applicable

Public Input: None

Adjournment: Commissioner Frank Kotowski made motion to adjourn at 1:20pm. Commissioner Richard Bairam seconded, all in favor. The motion was carried unanimously.

Respectfully Submitted,

Frank Kotowski

Frank Kotowski
Clerk

Hooksett Sewer Commission
Hooksett, NH
Phase III Capital Improvements

Construction Progress Meeting No. 06 Minutes

12:30 p.m – Monday, September 10, 2018
Hooksett Wastewater Treatment Facility

Attendees		Representing
Sid Baines	Chairman	Hooksett Sewer Commission
Frank Kotowski	Commissioner	Hooksett Sewer Commission
Turk Bairam	Commissioner	Hooksett Sewer Commission
Bruce Kudrick	Superintendent	Hooksett Sewer Commission
Kim Langlois	Clerk	Hooksett Sewer Commission
David Mercier, PE	Senior Project Manager	Underwood Engineers
Terry Buck	Owner	T. Buck Construction, Inc.
Mark McPheters	**Project Manager**	**T. Buck Construction, Inc.**
Tim Cunningham	Superintendent	T. Buck Construction, Inc.
Dan Dudley	Construction Review	NHDES

PROJECT SUMMARY

Contract Start Date:	**May 7, 2018**
Substantial Completion:	**September 2, 2018 / 120 days.**
Final Completion:	**October 2, 2018 / 150 days.**
Contract Time Elapsed:	**126 days / 105% to substantial completion (as of meeting date).**
Contract Amount:	**$634,670.84 (includes C.O. #3)**
Amount Billed to Date:	**$527,282.98 / 83.0% (Pay Req # 5)**

NEW BUSINESS

1. Contact List

No changes.

2. Submittals

Current submittal log attached.

- Reviews outstanding.
  - None.

- O&M Manuals.
  - Blowers
  - Chemical feed pumps – included with shop drawing submittal.
  - Chemical tank mixer – **to be submitted**
  - VFDs – **to be submitted**
  - Slide gates – **to be submitted**

3. Request for Information

None outstanding.

4. Work Completed to Date

Completed since Project Meeting No. 5:

- Screens and air spargers installed in IFAS Tanks 3 and 4.
- Chemical feed pumps and mixer installed. Start-up completed.
- Stainless steel air piping completed.
- Blower installation and start-up completed.

5. Schedule of Work for the Next Two Weeks

- **T. Buck to provide updated schedule (required for each progress meeting)**
- Complete pump room modifications.
- Weir plate installation.
- Transfer disks back to IFAS Train 2. (Tentatively scheduled for this week – **Sept. 11**)
- Sludge line repair scheduled for week of Sept. 17.
- Startup instrumentation and PLC/SCADA programming.

6. Change Order Items

- CO #4 –
  - Modifications to screen support legs.
- Pending change order items
  - New grating and stop gate at splitter box. Confirming installation details, may require additional contract time.
  - Relocate small electrical box for NRCY leak detection in electrical/blower room.
  - **New ambient temperature sensor in Electrical/Blower Room.**
  - **New mini-split AC unit in Electrical/Blower Room.**
  - **New suction pressure gauge on blower intake.**

7. Payment Request Status

- Payment request No. 5 has been reviewed by UE.

8. Construction Issues

- Cooling/ventilation in Blower Room. **Blower temp should not exceed 104°C, per manufacturer.**
- Ambient temperature alarm in Blower Room. **LCS to add by change order.**
- Monitoring pressure drop on blower intake (filter replacement). **Add gauge.**
- Timer for chemical storage tank mixer. Specs call for this programming by LCS.
- **Ayer to reinstall flood float switch in magnesium hydroxide containment area.**

9. Other

- Full-scale pilot test procedures – see attached. **Need to start with media at 30% fill fraction in all four IFAS tanks. This is 13 feet down from top of wall.**
- $MgOH_2$ standard operating procedure – see attachment.
- **What size filter on blower suction? UE to email Bruce.**

The next progress meeting will be held at the Hooksett Wastewater Treatment Facility on:

Monday, October 1, 2018 at 12:30 p.m.

Copies to: Margaret Blank – UE; Donald Winterton – Hooksett Town Council; Dave Cloutier – NHDES.

2160.08

HOOKSETT, NH – HOOKSETT SEWER COMMISSION (HSC)

FULL-SCALE PILOT PREPARATION AND PROCEDURES

PHASE 3 CAPITAL IMPROVEMENTS

After construction of the Phase 3 Capital Improvements is completed, a full calendar year of full-scale piloting will be performed to confirm the hydraulic and organic capacity of the modified IFAS System. The following paragraphs describe the procedures proposed for accomplishing full-scale confirmation of the upgrade.

IFAS Media Fill Fraction

The IFAS media fill fraction plays a very significant role in the system. The fill fraction affects both the hydraulic capacity and the organic capacity of the plant. Therefore, it is important to establish the correct fill fraction for the full-scale piloting at today's flows and loads so that it will be directly scalable to the future desired flows and loads. Under previous reports, Underwood has projected through modeling that a media fill fraction of 35% in a total of six (6) IFAS basins sized to match the existing IFAS basins will allow an average daily flow of 1.6 MGD to be treated to an ammonia level of 1.3 to 2.3 mg/L at 10°C. This does not quite meet the <1.0 mg/L goal, but that is all the media the HSC has and purchasing additional M-chip media is not an option. Given how close the modeled performance is to the desired goal at 10°C and the fact that if the HSC eventually gets an ammonia or total nitrogen limit it will not be year-round, piloting will be performed at the equivalent of a 35% fill fraction.

Based on the above, at a 35% fill fraction, each tank should be capable of treating the equivalent of 1/6 of 1.6 MGD or 0.27 MGD. This is problematic in that running one (1) train with two (2) IFAS tanks at 35% fill fraction would provide a capacity of 0.54 MGD while running both trains with four (4) IFAS trains at 35% fill fraction would provide a capacity of 1.08 MGD. The current average daily flow to the Hooksett facility is 0.67 MGD which falls in the middle of those two scenarios.

Because one train at 35% fill fraction is not enough to achieve the desired treatment at today's flow, it will be necessary to conduct the organic pilot testing and the hydraulic pilot testing independently at different fill fractions. Underwood has modeled the plant at 0.67 MGD and projects that a fill fraction of 30% across two trains (4 IFAS tanks) will be able to meet the goal of <1.0 mg/L ammonia at 10°C. However, it is still recommended that hydraulic testing be performed at a 35% fill fraction as described later in the text.

For reference, the following table presents both the true and effective surface area available based on various media fill fractions at Hooksett.

Tank ID	Tank Volume, m3	Fill Fraction	True SA, m2	Assumed Effective SA Fraction	Effective SA, m2
2014 Evaluation/Calibration/Validation					
IFAS 3	227.65	0.55	150,249	0.5	75,125
IFAS 4	221.69	0.52	138,335	0.5	69,167
Total	**449.34**		**288,584**		**144,292**
IFAS 3	227.65	0.55	150,249	0.74	111,184
IFAS 4	221.69	0.52	138,335	0.74	102,368
Total	**449.34**		**288,584**		**213,552**
Oct 2016 Est					
IFAS 3	227.65	0.55	150,249	0.74	111,184
IFAS 4	221.69	0.52	138,335	0.74	102,368
Total	**449.34**		**288,584**		**213,552**
2017 Pilot - Organic					
IFAS 3	227.65	0.3	81,954	0.74	60,646
IFAS 4	221.69	0.3	79,808	0.74	59,058
Total	**449.34**		**161,762**		**119,704**
2017 Pilot - Hydraulic					
IFAS 3	227.65	0.35	95,613	0.74	70,754
IFAS 4	221.69	0.35	93,110	0.74	68,901
Total	**449.34**		**188,723**		**139,655**

** Carrier is Type M (1200 m2/m3)

*** Specific volume = 0.23 m3/m3

SA = Surface Area

Full-Scale Organic Pilot Testing

Under the Phase 3 Capital Improvements Project, the Contractor will remove, dry out, bag, and transport to storage all IFAS media from IFAS Train No. 1 which has been offline and is mostly free of bacterial growth. At the end of the Phase 3 Capital Improvements Project, the active media in IFAS Train No. 2 will be distributed through both trains to achieve the 30% fill fraction in all four tanks.

In order to perform a full-scale pilot that will be reflective of future desired conditions, Underwood recommends that sludge wasting be performed 24 hours/day utilizing all three (3) available sludge holding tanks. Given that two (2) of the sludge holding tanks cannot currently be utilized due to leaking underground piping, the Phase 3 Capital Improvements includes sealing these lines. Return activated sludge (RAS) rates should be based off of effluent flow and should be kept high in order to maintain minimum sludge blankets in the clarifiers so that the mixed liquor organisms are kept within the bioreactors where they are needed to do work. Waste activated sludge (WAS) rates should be lowered to that which is necessary to allow wasting for

15 minutes/hour to maintain the desired aerobic SRT of the system. Because the existing RAS/WAS rate cannot be lowered as much as desired due to a high point in the existing combination RAS/WAS line, the Phase 3 Capital Improvements project includes installing an automatic air relief valve at the high point in this line.

The anticipated completion of the Phase 3 Capital Improvements is December 1, 2017. Underwood recommends operating the full-scale organic pilot from December 1, 2017 to December 1, 2018, as a minimum. The rationale for running for a full year is to see the effects of seasonal variations not only in terms of flow and wastewater temperature but in terms of the shift of microbial population from mixed liquor to fixed film as has been observed at the Hooksett facility.

Currently, the peak forward flow through the IFAS tanks is limited to 2.4 MGD through one (1) train. This is accomplished by reducing the nitrate recycle rate when influent flows become too high. With the recent addition of air spargers to the screens in IFAS Train No. 1 (August 2017), two (2) trains can now be operated, and the peak hydraulic flow capacity doubles to 4.8 MGD (and will increase even more once the additional screens are added to IFAS Train No. 2 under the Phase 3 Capital Improvements). Underwood recommends that the SCADA programming and setpoints be revised so that during the pilot both the RAS rate and the nitrate recycle rates be set at 100% of effluent flow and that the peak rates for both RAS and nitrate recycle be locked out at 1.4 MGD each. This would allow an influent flow of up to 2.0 MGD to be passed with appropriate RAS and nitrate recycle rates before intervention would need to occur to prevent forward flows from exceeding 4.8 MGD combined. At influent flows above 2.0 MGD, the nitrate recycle pumps could be temporarily shut off.

Another issue that needs to be addressed in order for the full-scale pilot to be representative of desired future conditions is alkalinity. The wastewater alkalinity needs to be maintained at a sufficient residual to prevent inhibition of the nitrification process. In past reports, Underwood has noted that the Hooksett effluent alkalinity has commonly dropped below 50 mg/L. As a result, the Phase 3 Capital Improvements will add a new alkalinity feed system for the plant. During the pilot, this alkalinity feed system should be operated to maintain a minimum effluent residual alkalinity of 60 mg/L.

During the one-year organic pilot testing period, Hooksett should collect composite influent and effluent samples for analysis by an outside laboratory once per week, along with their regular permit data collection. The following data should be collected:

Influent: COD/BOD5/TSS/VSS/TKN/NH3N/TP/Alkalinity

Effluent: BOD5/TSS/TKN/NH3N/TP/Alkalinity

Process: pH/Temp/MLVSS/MLSS/SRT/BiofilmMass/SVI/plant RAS, WAS and dewatering flows/TSS and %Solids of sludge

Underwood will provide operational advice and assistance to the Town and will review the data being collected on a monthly basis.

Full-Scale Hydraulic Testing

Underwood proposes to perform full-scale hydraulic testing only on Train No. 2 after it has been upgraded with additional screens as part of the Phase 3 Capital Improvements. It is proposed that the full-scale hydraulic testing be performed on specific dates by manually inducing the magnitude of the flows desired to match feature peak design flows. Measurements will be taken during each test at key locations to confirm the accuracy of the calculated hydraulic profile. The duration of each testing event will be between 4-8 hours or that which can be accomplished within a single work day while the plant is manned. The key parameters affecting the hydraulic capacity through the IFAS tanks include time of year and water temperature (as it affects the amount of growth on the IFAS media), and the amount of mixing air provided within the basin (which assists in preventing the media from clogging the retention screens). The following hydraulic tests are recommended:

- Summer conditions, warm wastewater, high air flow rate
- Summer conditions, warm wastewater, low air flow rate
- Winter conditions, cold wastewater, high air flow rate
- Winter conditions, cold wastewater, low air flow rate

It is recommended that each hydraulic test be operated for a minim 2-hour period to allow time for stabilization and to confirm whether clogging of the retention screens and backup of wastewater within the IFAS tank occurs at the desired target hydraulic flow. Given that the media fill fraction will be set at 30% for the first year after completion of the Phase 3 Capital Improvements, Underwood recommends that one day of winter hydraulic testing and one day of summer hydraulic testing be done at the 30% fill fraction, and then after the one-year organic full-scale pilot is complete, additional media should be added to IFAS Train No. 2 to increase the fill fraction to 35% in each tank and the hydraulic testing should be repeated under winter conditions.

Regarding the desired hydraulic test flow rate, Underwood via previous reports, has established that the desired peak hourly flow rate recommended for a 1.6 MGD average daily wastewater flow through the IFAS tanks is 9.4 MGD, including RAS and nitrate recycle flows, as can be seen in **Table 1** below.

TABLE 1 - RECOMMENDED PEAK HOUR DESIGN FLOWS

FOR EACH AREA OF THE HOOKSETT WWTF

AREA of PLANT	*GRAVES* *Peak Hour Design Flow* *for 2.2 MGD ADF*	*UNDERWOOD* *Peak Hour Design Flow* *for 1.60 MGD ADF*
Headworks to SMH C	4.4 MGD Influent **4.4 MGD TOTAL**	5.60 MGD Influent **5.60 MGD TOTAL**
SMH C to Anoxic Reactors 3 & 4	4.4 MGD Influent 2.2 MGD RAS **6.6 MGD TOTAL**	5.60 MGD Influent 1.60 MGD RAS **7.20 MGD TOTAL**
Anoxic Reactors 3 & 4 to Floc Chambers 1 & 2	4.4 MGD Influent 2.2 MGD RAS 2.2 MGD NRCY **8.8 MGD TOTAL**	5.60 MGD Influent 1.60 MGD RAS 2.20 MGD NRCY **9.40 MGD TOTAL**
Floc Chambers 1 & 2 to Clarifiers 1 & 2	4.4 MGD Influent 2.2 MGD RAS **6.6 MGD TOTAL**	5.60 MGD Influent 1.60 MGD RAS **7.20 MGD TOTAL**
Clarifiers 1 & 2 to Merrimack River	4.4 MGD Influent **4.4 MGD TOTAL**	5.60 MGD Influent **5.60 MGD TOTAL**

Full-scale hydraulic testing will be performed on Train No. 2 only as that will be the only train that has been fitted with the additional screens after completion of the Phase 3 Capital Improvements. During the hydraulic tests, flow to Train No. 1 will be temporarily shut off and all flow will be passed through Train No. 2. Train No. 1 will be isolated by closing the influent gate in the D-box in front of the IFAS tanks and by closing the gate in the secondary clarifier influent D-box coming from Train No. 1. In addition, the diversion pipe from the BNR tanks should be plugged temporarily during the hydraulic tests.

The recommended forward flow for the tests will be 9.4/2 or 4.7 MGD through Train No. 2. To temporarily achieve this flow, the RAS pumps can be turned up to full speed to achieve 1.1 MGD, the nitrate recycle pump can be turned up to full speed to achieve another 1.1 MGD, and a portable trash pump capable of pumping the difference between the influent flow rate and 2.5 MGD will need to be set up to pump effluent from the effluent pump wetwell to the D-box in front of the IFAS tanks. Total flow between the RAS, nitrate recycle, influent, and trash pump will be held as constant as possible at 4.7 MGD for a minimum 2-hour test. During that timeframe, regular measurements of the water elevation in IFAS Tanks 3 and 4 will be taken to verify the headloss occurring and to document any backups which occur within those tanks as a result of retention screen clogging by the media.

IFAS Media Removal and Storage

At the beginning of the Phase 3 Capital Improvements Project, the Contractor to remove all media from IFAS Tank Nos. 1 and 2 and temporarily stockpile the media on-site on tarped areas to allow it to dry out prior to loading the dry media into storage bags and transporting those bags to a location identified by the Town. The media in these tanks is relatively clean and free of bacterial growth at this time and will store better.

Once the existing media is out of IFAS Tank Nos. 1 and 2, the Contractor shall coordinate with Hooksett staff to transfer all media and mixed liquor from IFAS Tank Nos. 3 and 4 to IFAS Tank Nos. 1 and 2.

Having IFAS Tank Nos. 3 and 4 empty of media will allow early inspections of the concrete to occur so that concrete treatment recommendations can be verified, and will allow the necessary tank modifications to occur without fear of affecting the IFAS media.

At the end of the Phase 3 Capital Improvements work, Underwood recommends that the media from IFAS Tank Nos. 1 and 2 in excess of 30% fill fraction be transferred over to Tank Nos. 3 and 4. The approximate fill fraction in all four (4) IFAS tanks is 50% following the 2011 overflow event. Underwood will work with the Contractor to verify that the final fill fraction in all four (4) IFAS tanks is 30% at the end of the Phase 3 Capital Improvements. This will require adding back in some media that was dried and bagged.

The manufacturer's guarantee for the IFAS media was for a 20-year life. Given that the media was installed in 2010, the media is already 7 years old. Underwood recommends that samples of the media be sent out to a third-party testing facility to confirm the remaining useful life of the media as compared to its original strength parameters. In particular, there are concerns relative to the media that has been stored in the off-line IFAS Train No. 1 which has only been occasionally stirred and rolled over during that 7-year time period and the media that sits on the surface of the tank has been exposed to UV rays which have the potential to degrade the media.

In the event that the media in either train appears to be nearing the end of its useful life or if there is a significant difference in remaining useful life from one train to the other, then a regrouping on the approach to long-time IFAS media use will need to occur. Initial visual inspection and pliability of the media is still good suggesting there is significant life left in the media.

2160-05

HOOKSETT, NH WASTEWATER TREATMENT FACILITY

STANDARD OPERATING PROCEDURE

FOR

MAGNESIUM HYDROXIDE BULK STORAGE TANK AND FEED PUMP MAINTENANCE

Bulk Storage Tank Maintenance

When a new load of magnesium hydroxide is received, it is important to understand that the material is very viscous/thick. Although it is possible to run the mixer on a timer basis, operators should (over time) establish an acceptable period of Mixer ON/Mixer OFF such that the material does not begin to solidify within the tank. The magnesium hydroxide chemical is such that if it is allowed to coat an area and dry, it will "cake up" and become difficult to remove. As a result, it is recommended that plant staff utilize a hose three days a week on Monday, Wednesday, and Friday to hose down the bulk tank above the magnesium hydroxide liquid level to wash down the shaft of the mixer and the walls of the tank to prevent dried magnesium hydroxide buildup from occurring on these surfaces. **(NOTE: Diluting the chemical with water is not a concern.)**

At the time of magnesium hydroxide bulk deliveries, plant staff should shut OFF the mixer completely during the filling process and only turn the mixer back ON once the tank is filled. **The manufacturer does not recommend running the mixer through a bulk tank fill cycle.**

Magnesium Hydroxide Feed Pump Maintenance

Given that the magnesium hydroxide chemical is a viscous material that is prone to drying, building up, and hardening on surfaces, plant staff should on a weekly basis perform a suction line and discharge line flushing procedure.

On the suction side of the pumps, normal operation will be to have the flushing water connection turned OFF and isolated so that the pump is drawing chemical from the magnesium hydroxide tank. Once a week, plant staff should stop the pump, isolate the pump on the suction side, and open the flushing water for a brief 5-second period to flush water back through the suction line and into the bulk storage tank. After 5 seconds, the valves should be turned to isolate the bulk storage tank and the valve isolating the pump should be opened and the pump run for a period of 15 minutes at full speed (60 Hz) in order to flush the suction side and the hose within the pump body.

On the discharge side of the pump, normal practice will be to have the flushing water valve cracked partially but not fully open. The goal would be to provide a continuous water flushing and chemical carrying volume within the line but not to completely fill the discharge line so that the hose pump is not pumping into a pressurized line. Once a week, however, it is recommended that the pump be stopped, the discharge valve closed to isolate the pump, and the flushing water valve to be opened completely for a period of 5 minutes. At the end of the

5-minute discharge line flushing period, the flushing water valve should be returned to a slightly cracked position and the valve isolating the pump can be opened and the pump returned to normal operation.

NOTE:

It is acceptable to add water to the magnesium hydroxide chemical in the form of washdown water or carrying water in order to minimize drying out and buildup of the chemical on surfaces. However, staff may find that over the course of utilizing a full bulk tank of chemical that the concentration will become reduced by the addition of washdown water and therefore the speed at which the pump must be run to maintain the target effluent alkalinity of 50 to 75 mg/L may increase.

		AUGUST	**2018**		
		FLOW	**INFO**		
DATE	DAY	PLANT	MARTIN'S FERRY	MERRIMACK ST	**GRAVITY**
1	W	623,000	305,161	112,510	205,329
2	T	605,000	245,876	109,200	249,924
3	F	729,000	357,747	137,820	233,433
4	S	**1,006,000**	**513,601**	**177,600**	314,799
5	S	987,000	473,801	164,600	348,599
6	M	899,000	382,040	154,550	362,410
7	T	837,000	338,931	133,250	364,819
8	W	868,000	407,206	126,870	333,924
9	T	908,000	388,501	128,290	391,209
10	F	886,000	337,419	123,310	425,271
11	S	780,000	401,824	**178,390**	199,786
12	S	**1,221,000**	**525,688**	**217,000**	478,312
13	M	**1,104,000**	**474,226**	**159,600**	470,174
14	T	988,000	437,400	157,040	393,560
15	W	**1,016,000**	**458,003**	**148,050**	409,947
16	T	874,000	346,847	127,240	399,913
17	F	880,000	344,808	137,530	397,662
18	S	852,000	358,664	147,750	345,586
19	S	816,000	365,820	158,070	292,110
20	M	826,000	324,802	134,620	366,578
21	T	730,000	297,126	124,970	307,904
22	W	830,000	317,635	136,500	375,865
23	T	739,000	309,801	124,830	304,369
24	F	773,000	264,415	123,050	385,535
25	S	695,000	286,523	133,480	274,997
26	S	707,000	337,003	157,160	212,837
27	M	745,000	319,383	117,210	308,407
28	T	662,000	289,011	117,570	255,419
29	W	706,000	306,304	113,720	285,976
30	T	662,000	305,586	109,090	247,324
31	F	647,000	272,952	105,130	268,918
AVG		825,839	357,874	138,581	329,384