

## PF, SEF, DEF AND THE GREATEST OFFENSES

By Raymond Lee

On January 29th, 1995, the San Francisco 49ers totally dismantled the San Diego Chargers in the Super Bowl. The ease with which they scored caused many to call them the greatest offensive team of all time! Indeed with such great athletes as Jerry Rice, Steve Young, and John Taylor they seemed to be able to score at will. I thought in watching that game that if they weren't the greatest offensive team they would be right there with any team in the history of football.

I thought it would be interesting to devise a method to, if not choose the greatest offensive team, at least to define and clarify what makes a great offense in football. By doing this, we can get an idea of what the greatest offensive units in football history are. I'm looking for the GREATEST OFFENSIVE UNIT, so I'm not including special team units or teams that have great defenses that can score many points for you.

The job of any offensive unit in football is to score as many points as possible. Unfortunately, in football, unlike in baseball, scoring is often dependent on the relationship between offense and defense. The 1969 Vikings led the NFL in scoring despite having a mediocre offense because their great defensive unit gave them the ball so often.

Usually a football team's offensive unit has to move the ball down the field to score a touchdown or a field goal. My problem in comparing offensive units is that a team like the 1984 Dolphins could score a touchdown on just a few plays (therefore using very little time) and a team like the 1972 Dolphins might have a 12-play drive using up ten minutes. Both teams used one drive to score one touchdown, but the 1984 Dolphins (if they could keep up the pace) would score far more points because by scoring faster, they probably would have more drives. The advantage of the 1972 Dolphins is that their opponent would have fewer drives and fewer opportunities to score.

Another problem is how to address the factor of turnovers. What good is it when a team scores a touchdown in one drive and gives up turnovers in their next two drives? According to Bob Carroll, John Thorn and Pete Palmer's excellent book *The Hidden Game of Football*, a turnover is worth about a negative four points. That's two points against your offense and two points for your opponent's offense. If a team scores four touchdowns in 12 drives in a game, is it really that good if the offensive unit gives up so many turnovers that they hand the other team 30 points?

The way I decided to solve these problems is to look at a team's drive efficiency. There is a correlation between yards gained by a team's offensive unit and points scored. In *The Hidden Game of Football* the authors, through extensive study, have concluded that for every 12 yards a team gains, they should get one point. Therefore if we calculate a team's average yards per drive divided by 12 and minus the fraction of points lost on a team's average number of turnovers per drive, we should get an idea how effective a team is offensively.

To give an example, let's look at the 1972 Dolphins who scored 385 points. First, I subtract the Dolphins' touchdowns (and extra points) on kickoff returns, punt returns, interception returns and safeties. I figure the Dolphin offensive unit scored 378 points (385 minus 7 for the touchdown they scored on an interception, assuming the extra point was good). The Dolphins had 5036 yards gained on offense. Divide that by 164 drives. (You get an approximation for the number of drives by adding the number of games the team played to the number of punts, passing and rushing touchdowns, field goal attempts and turnovers by the opponents.) You get an average drive of 30.71 yards. You divide that by 12 and you get a factor of 2.56 points per drive. I'll call this THE POINTS FACTOR (PF). This is the average amount of points a team would score per drive if it had no turnovers.

However, you must take turnovers into account. The 1972 Dolphins had 28 turnovers in 164 drives for an average turnover per drive of .170. A turnover, remember, costs a team an average of four points -- two in missed opportunities against its own offense and two for its opponent's offense. Take the Dolphins'

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turnovers per drive (.170), multiply by two (the two points the offense lost), and subtract that from the Points Factor ( $2.56 - .34 = 2.22$ ). Call this THE SCORING EFFICIENCY FACTOR (SEF).

If you multiply this by 164 drives, you get 364 points -- satisfactorily close to the Dolphins' real number of 378 points.

However it doesn't just stop here. The final and most important number is THE DRIVE EFFICIENCY FACTOR (DEF). Because a turnover costs a team 4 points, not 2, you take the Points Factor of 2.56 minus the Turnover Per Drive number of .170 times 4 and you get .680. The Points Factor of 2.56 minus .680 equals 1.88 for the Drive Efficiency Factor. This number of 1.88 times 164 is the true number that the offense benefited a team. The plus factor for the 1972 Dolphins is 308. This is the net number of points the offense benefitted a team.

I worked my numbers to many decimals, but in this article I rounded to hundredths. Because of rounding your numbers, may differ slightly from mine. Obviously the idea behind the Drive Efficiency Factor is that is it better to score 14 points and give up none than to score 21 points and give up 14.

You might think the team with the best Drive Efficiency Factor is the greatest offensive unit of all time. It's not that simple. With rule changes over the years, offense can be easier in one year and tougher in the next. A middling DEF in one year may lead the league in another season.

Because of this I figured the Point Factor, Scoring Efficiency Factor and Drive Efficiency Factor for the league for every year for every team I chose. This way you can see how the team compares with the league average in those factors for the particular season. And you can see percentagewise how much above (or below) average that team was to the league that year. The research only goes back to 1950 because statistics were less complete before then.

### **The AFL MYTH**

In doing the factors for the leagues, I had some interesting findings. First thing I noticed when I did the 1961 AFL season was that their offenses were surprisingly poor! Their yards per drive, Average Point Factor, Scoring Efficiency Factor, Drive Efficiency Factor and turnover per drive were not as good as the average NFL team in 1961! In other words, offenses were not up to NFL levels. The AFL was more of a defensive league -- or if you look at the negative side, a poor offensive league. The early years of the AFL had the myth of wide open offenses with much passing. Supposedly defenses were weak and offense ruled. My research says the opposite was true. Early AFL teams scored more because their defenses got them the ball more. Sure, percentagewise the AFL threw more, but with the exception of perhaps Houston, the passing was ineffective. That's why there were more drives. Passes were incomplete stopping the clock, drives ended and the other team got the ball, or turnovers occurred.

The average 1961 AFL team had 190.13 drives for an average of only 22.80 yards per drive with a turnover per drive factor of .239. Compare this with the average NFL team in 1961 that had the ball for an average of 25.03 yards per drive and a turnover factor of .230. The NFL teams moved the ball better and gave up the ball less. So why did AFL teams score more? The answer is that the average NFL team in 1961 had 174.5 drives for a 14-game season -- 15.5 fewer drives than the average AFL team. The average NFL team would have had to play an extra game and a quarter to equal the average number of drives for an AFL team.

Another reason scores were not higher in the NFL than in the AFL was because everything is relative. If both sides gain more yards per drive, more time will run giving an opponent less time on offense. To check to see if all the information was just a fluke or not, I also compared the 1962 NFL and AFL seasons and found basically the same results.

### **The Top Teams**

Anyway, here are the teams I decided to compare offensively with the 1994 49ers:

(1) **1951 Los Angeles Rams** -- Strangely enough this team was slightly more effective than the 1950 Ram team that on a per game basis, averaged more points than any other team in history with 38.8!

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- (2) **1961 Houston Oilers** -- I know what you're saying. "How can you even consider a team from the early AFL to have the greatest offensive unit of all time?" The answer is I don't. I'm simply using the Oilers as an example of how a team can be way above the league norm offensively. I'm sure the Packers of the same year were a better offensive squad.
- (3) **1961 Green Bay Packers** -- I chose them over the 1962 Packers because, as with the 1951 Rams, the team was more offocfive on drives than the 1962 team.
- (4) **1968 Oakland Raiders** -- Probably the best offensive AFL team of the late sixties and one of the best, if not the best, team in football this year.
- (5) **1968 Dallas Cowboys** -- 431 points scored.
- (6) **1971 Dallas Cowboys.**
- (7) **1972 Miami Dolphins** -- The unbeaten team.
- (8) **1982 San Diego Chargers** -- Air Coryell at its peak.
- (9) **1983 Washington Redskins** -- Scored a record 541 points in a season.
- (10) **1984 Miami Dolphins** -- Scored 513 points. Dan Marino in his best oeuon with 48 TD passes.
- (11) **1984 San Francisco 49ers** -- Joe Montana's first great offensive squad.
- (12) **1987 San Francisco 49ers** -- Jerry Rice in perhaps his best year, but sort of an asterisk team with the strike games.
- (13) **1989 San Francisco 49ers** -- Joe Montana in his best year throwing to Rice and Taylor. Roger Craig running the ball wasn't bad either.
- (14) **1991 Washington Redskins.**

And the winner is ... (drum roll, please) the 1951 Rams! The three most dominant offensive teams in football history (at least from the ones I chose) above their leagues are the 1951 Rams, the 1961 Oilers, and the 1982 Chargers in that order. The 1951 Rams and the 1961 Oilers were more than twice as effective in Drive Efficiency Factor as the average team in their leagues those years and the 1982 Chargers were more than 91% better. If we don't take into account percentage over league in Scoring Efficiency or Drive Efficiency, then the 1982 Chargers are clearly the greatest offensive team in history. If they had the same number of drives as the 1994 49ers, they would score 562 points! If they had as many drives as the 1983 Redskins, 616 points! Remember I'm just talking about the offensive units and not including the special teams and defensive touchdowns many teams get over the course of a season.

It might be interesting one of these days to see how efficiently a quarterback handies an offense compared to another QB. So what if a quarterback has a lower passing rating than another if the one with the lower rating handles the offense better and puts more points on the scoreboard for his team.

### **The Lesser 49ers**

Joe Montana can look at this article and take some consolation in knowing that while some of his records fell to Steve Young, three 49ers teams he quarterbacked were more efficient offensively than the 1994 49ers. The most efficient strangely enough is the 1984 49er team that had Dwight Clark and Freddie Solomon as receivers instead of Jerry Rice and John Taylor.

The real surprise was that the 1994 49ers finished last on our list! When I first saw this I went back to doublecheck my figures. Superficially, if you look at the 49ers, they have an incredible offensive talent level with Rice, Taylor, Watters, Jones and Young. However some other teams have as many stars or more. For example, imagine the 1972 Dolphins running with Csonka, Kiick and Morris and with Griese and Morrall throwing to Warfield, Twilley, Briscoe and Mandich -- all under today's rules!

The best the 1994 49ers could do was finish 6th in scoring efficiency and 6th in drive efficiency. When you take into account percentage over league, they finish dead last in both major categories. The league averages are so much higher offensively now with the rule changes that even as great an offense as the 1994 49en is only 22% to 31% over the leaguer average. This is an excelllent percentage, but not as good as some other teams in league history.

My conclusion: the 1951 Rams and 1982 Chargers are the two best offensive units (relative to the league) in history. With apology to George Blanda, I'm eliminating his 1961 Oilers because the level of play was not yet up the standard of the AFL of later years or of the NFL of the time.

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This system of measuring offensive (and defensive) power seems to work better than simply measuring a team's average yards per game or points scored per game. It bypasses statistical illusions that can be caused by rule changes. The 505 points the 1994 49ers scored in a 16-game season was impressive, but it wasn't as impressive as the 385 pointz scored by the Dolphins in 1972 in 14 games in an era of greater defense.

### OFFENSIVE UNITS RELATED TO LEAGUE

	Scoring Efficiency Factor	Scoring Efficiency above leag.	Drive Eff. Factor %	Drive Eff. Factor above leag.
1. 1951 Rams	2.42	68.19	1.94	103.96
2. 1961 Oilers	2.29	60.88	1.88	100.11
3. 1982 Chargers	3.00	70.91	2.60	91.00
4. 1961 Packers	2.26	38.80	1.91	63.91
5. 1984 Dolphins	2.78	47.04	2.48	63.41
6. 1984 49ers	2.67	41.20	2.42	59.53
7. 1987 49ers	2.51	38.84	2.22	55.22
8. 1972 Dolphins	2.22	35.39	1.87	50.48
9. 1983 Redskins	2.32	25.58	2.14	48.29
10. 1971 Cowboys	2.00	33.30	1.60	48.19
11. 1968 Raiders	2.06	36.48	1.65	47.76
12. 1968 Cowboys	2.12	36.94	1.73	43.48
13. 1989 49ers	2.47	26.49	2.19	39.12
14. 1991 Redskins	2.42	24.93	2.16	37.26
15. 1994 49ers	2.44	22.49	2.19	30.99

### OTHER IMPORTANT OFFENSIVE STATISTICS

Teams	Drive	Yards per Factor	Points per Drive	Turnovers
1. 1951 Rams		34.67	2.89	.237
2. 1961 Oilers		32.25	2.69	.200
3. 1982 Chargers		40.89	3.41	.202
4. 1961 Packers		31.22	2.60	.171
5. 1984 Dolphins		36.89	3.07	.149
6. 1984 49ers		35.17	2.93	.122
7. 1987 49ers		33.63	2.80	.146
8. 1972 Dolphins		30.71	2.56	.171
9. 1983 Redskins		29.95	2.50	.088
10. 1971 Cowboys		28.77	2.40	.200
11. 1968 Raiders		29.51	2.46	.202
12. 1969 Cowboys		30.10	2.51	.194
13. 1989 49ers		32.89	2.74	.137
14. 1991 Redskins		32.07	2.67	.128
15. 1994 49ers		32.41	2.70	.128