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A computerized football scouting program for Ithaca College

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A COMPUTERIZED FOOTBALL SCOUTING PROGRAM

FOR ITHACA COLLEGE

A Research Project Presented to the Faculty

of the School of Health, Physical

Education and Recreation

Ithaca College

In Partial Fulfillment of the

Requirements for the Degree

Master of Science

by

Thomas J. Hansen

September 1981

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Ithaca College
School of Health, Physical Education and Recreation
Ithaca, New York

CERTIFICATE OF APPROVAL

MASTER OF SCIENCE RESEARCH PROJECT

This is to certify that the Research Project of

Thomas J. Hansen

submitted in partial fulfillment of the requirements
for the degree of Master of Science in the School of
Health, Physical Education, and Recreation at Ithaca
College has been approved.

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Aug. 3, 1981

A COMPUTERIZED FOOTBALL SCOUTING PROGRAM
FOR ITHACA COLLEGE

by
Thomas J. Hansen

An Abstract
of a project submitted in partial fulfillment
of the requirements for the degree of
Master of Science in the School
of Health, Physical Education
and Recreation at
Ithaca College

September 1981

Project Advisor: Dr. A. Craig Fisher

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ABSTRACT

A computerized football scouting system for the football program of Ithaca College, Ithaca, New York was developed. Several colleges and universities ($N = 150$) were surveyed. Under the scrutiny of the Ithaca College football coaching staff, it was determined that the optical scanner sheet was the most concise, comprehensive, flexible, and provided the relative ease of application necessary, as compared to the other means of computer scouting. The content of the optical scanner sheet was developed based on the specifications of the Ithaca College football coaching staff.

ACKNOWLEDGEMENTS

The investigator would like to extend his appreciation to the following people for their assistance in the completion of this study.

1. To Dr. A. Craig Fisher, my project advisor, whose time, encouragement, and advice aided tremendously in the completion of this study.
2. To my parents, for supplying me with the encouragement and showing patience throughout the duration of this study.
3. To Mike, Gary, Joe, Steve, and Rob, my roomates, for their support and friendship.
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5. To the Ithaca College football coaching staff, for without their support and assistance this project would never have been completed.

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Chapter 1

INTRODUCTION

Terminologies and systems are becoming increasingly more complex in college football each year. Nelson (1968) stated that "the expanding terminology of modern football can be organized and used in computer analysis" (p. 8). College coaches are placing so much emphasis on scouting opponents that computer analysis provides a tremendously valuable service. Scouting with the aid of computers will enable a team to include and organize vast quantities of information in a very short period of time.

Computer scouting will also affect coaches, in that it will force them to continue to modify their strategies and game plan. In order to keep pace with the computer scouting reports, coaches will need to use more innovations and deviate more often from traditional policies and procedures.

By decreasing the amount of time spent on scouting, the time spent on coaching and preparing will increase. It is well known that the act of coaching is the most important aspect of any football program. Time previously spent on scouting would then be available to the athletes.

It is inevitable that computers will move into almost every phase of life. Computers, therefore, should be able to be effectively used in football scouting to free the coach for more important work, that being coaching.

Scope of Problem

This study was initiated in an attempt to revise the existing computer football scouting program at Ithaca College, Ithaca, New York.

One hundred and fifty colleges and universities, based on their winning tradition, league of play, NCAA division of play, and geographical location, were surveyed in regards to their computer scouting system. Information received was scrutinized by the Ithaca College football staff for similarities in the existing program, conciseness, comprehensiveness, flexibility, and ease of application. Selected information was then modified to meet particular specifications under the guidelines set by the Ithaca College football staff.

Statement of Problem

The purpose of this project was to develop a computerized football scouting system for the football program of Ithaca College, Ithaca, New York.

Assumption of Study

The following assumptions were established in relation to this study:

1. It was possible to convert football terminologies and symbols into computer language.
2. A computer can be programed to process information needed in scouting reports.
3. Words can define movements.
4. Scouting reports were, for the most part, valuable in preparing for a football game.

Definition of Terms

1. Backfield actions are specific movements made by the four offensive backs (quarterback, halfback, fullback, flankerback) that describe a certain offensive play.
2. Distance is the amount of yardage necessary to gain a first down.
3. A down describes the number of opportunities that the offense

has to move the football 10 yards. There are four opportunities (downs) to achieve the 10-yard distance necessary to obtain a new set of four downs.

4. Field position is the location of the football on the playing surface, both laterally and horizontally.

5. The formation is the alignment of the 11 offensive players on the playing surface.

6. The hash mark denotes the center third of the playing surface. All offensive players begin within this hash mark area.

7. The hole hit denotes the area of attack by the offensive team.

8. The NCAA stands for the National Collegiate Athletic Association, which is the governing body for college athletics.

9. A pass pattern is the exact route a football player follows when attempting to receive a thrown football (pass).

10. The pass zone is a specific area of the playing surface on the defensive section of the field.

11. Play tendencies are the favorite areas of attack, formations, and backfield actions from given hash mark and field positions.

12. The receiver is the offensive player whose primary function is to catch a thrown football.

13. The scout is that person who attempts to collect useful information concerning a future opponent.

14. Scouting is the process of obtaining as much useful information about a future opponent as possible for purposes of formulating plans to take advantage of weaknesses while counteracting strengths.

15. The quarter is the division of time in football. There are 15-minute quarters in a college football game.

Delimitation

For the intent of this study, the following delimitation was made:

1. The terminologies and symbols used to describe such facets as formations and plays were those of the Ithaca College football coaching staff.

Limitations

For the intent of this study, the following limitations were made:

1. The project was limited to the guidelines and scrutiny of the Ithaca College football staff.
2. The project was limited in its application to the terminologies and symbols of the Ithaca College football program.

Chapter 2

REVIEW OF LITERATURE

The amount of literature related to computer analysis of football scouting information was found to be extremely limited. The literature review went as far back into time as 1951. Prior to the 1950's the game of football was less complex, therefore, the scouting systems used were simple and not applicable to the game of football today.

Computer Scouting Systems

In an article by Mehr (1967) entitled "Data Processing in College Athletics," he discussed the general function of the program developed to obtain scouting information at Amherst College. In the article, a survey was presented in which 125 college coaches were questioned about their use of the computer in their athletic program. Forty percent were using or investigating the use of the computer.

In athletics, one of the primary uses of the computer is for scouting opponents and is utilized most often in the football program. The information that is sent to the computer includes down, distance, play, hole hit, gain, pass zone, hash mark, formation, and defense used. A sample analysis from the computer would include the following (Mehr, 1967):

1. The running game statistics and long gain plays.
2. The play according to down and distance.
3. The plays according to hash mark.
4. The plays according to the hole hit.
5. The passing game statistics and passes by receiver.
6. The pass plays according to pass zone hit.

Mehr (1967) also mentioned four basic problems that limit the use of data processing in college scouting. They were as follows:

1. Limited availability of machines.
2. Limited personnel available to assist in programing and machine operation.
3. Relative cost of the output.
4. General lack of knowledge on the applicability of data processing and the benefits therein.

A similar program to the aforementioned was discussed by Parac (1967), in an article entitled "Computerized Football Scouting." Parac (1967) discussed the use of a scouting card to collect data. The card was designed so that the following information could be recorded: play number, down and distance, field position, hash mark, zone, type of play, formation, play name, penalty yardage, fumble, ball carrier, tackler, defense, kicking game, kick to, return to, punt protection, passing game, pass route, passing zone thrown to, pass success, score, and formation design. Following the completion of this data collection, the data were transferred to IBM cards using key punch machines. The cards were then fed into the computer for analysis.

Metts (1965) presented a scouting card to use with a punch card system. This card was organized so that the information was distributed on the outer portion of the card. This made it possible to punch out a certain area along the edge of the card and manually sort and categorize each. The main thrust of this technique was on offense and on the kicking game.

"Key-sort of Scouting" was examined in an article by Olcott (1965). In the article a well organized scouting card was presented. The

system's information is recorded in the appropriate spaces located in the center of the card prior to the start of each play. Down and distance, yard line, hash mark, and offensive formation were some of the details that were recorded. Following each play, items such as yards gained or lost, backfield action, runner, hole hit, pass pattern, type of pass, receiver, and other similar information were recorded. Upon the completion of the game, the scout records the data noted on the card by punching out the appropriate perforations along the card edges. In order to determine the desired tendencies according to the specific situation or field position, the scout would run a pick through the perforation appropriate to the desired situation, shake out the cards, and evaluate the situation.

Blackman (1970) discussed the use of the computer in the football scouting program at Dartmouth College. Play number, sequence, down and distance, field position, hash mark, formation, motion, play name, point of attack, ball carrier, pass zone, receiver, result, and score differential were fed into the computer. The tendencies determined in the Dartmouth system included:

1. Play tendencies according to down and distance.
2. Play tendencies for lateral field positions.
3. Play tendencies for vertical field positions.
4. Play tendencies according to formations.

Although these tendencies were all important to Blackman, he made the following statement: "Once you have assembled the play by play scouting data correctly, whether by computer or by some mechanical means, there is an almost infinite number of tendencies that can be made" (p. 15).

Blackman (1970) also stated that one of the first concerns of the

coaching staff is to determine what information or tendency summaries are important to the football program.

Hammer (1963) discussed the general function of the scout and his duties. Guidelines were set up for obtaining accurate and thorough scouting reports. Five general categories were established for the breakdown information. The categories were as follows: general information, personnel, offense, defense, and kicking game. The offensive breakdown included tendencies for down and distance, hash mark, points of attack, trouble plays, and passing game.

As stated by Walker (1960), a scouting report must be presented to the team in a format that can be easily understood. The dissemination of information will be more beneficial if it is presented early in the week, in order that adequate preparation take place.

Katchmer (1958) stated that there are very few quarterback geniuses in the game of football. Most follow a set routine of plays which have been successful for them in the past. Generally, in a rough or special situation, a quarterback will use a certain series of plays which have proved successful in the past. This would be one of the tendencies that a scout would attempt to ascertain.

Leahy (1951) showed a great deal of interest in the scouting of the opponent's offense. As a scout he would attempt to ascertain the favorite plays of opponent. Through the determination of these favorite plays, Leahy (1951) would then formulate the opponent's offensive tendencies. These offensive tendencies would later be used in the development of the game plan.

Scouting is a skill that must be learned like any other phase of football. "When all other factors are equal, the team that has the

most knowledge about the opponent has the decided advantage" (Nolan, 1972 p. 8).

As stated by Hampton (1978), computer analysis of football scouting information takes approximately 1 hour and 45 minutes. Used on an opponent, this time can result in a better strategy by coaches as well as a much faster compilation of scouting information. "No data are received that could not be obtained by hand, but data are organized about four times faster with the use of the computer" (p. 32).

The value of the computer analysis of football scouting information was further emphasized by Dick Nolan, former head football coach of the San Francisco 49'ers. He stated that:

The computerized reports give me 50 percent more information 20 percent faster than any manual system ever used. I can get frequencies and tendencies on any set of situations I ask for. A coach who understands the power and limitations of the computer method has a definite advantage over his opponent. (Witzel, 1969, p. 28)

These assertions were again emphasized by Benson (1967): "All this can be done by hand but the machine minimizes the time spent in the compilation of details" (p. 36).

Correspondence

Correspondence was directed to several coaches of colleges, of various size and NCAA level of competition, in regards to their use of the computer in the analysis of scouting information. It was determined that, because of the sensitivity of computer scouting materials, many coaches were not willing to share information by mail. Coaches, such as Hayden Fry (1981), head football coach at the University of Iowa, and Gene Epley (1981), assistant football coach at the United States Military Academy, made it clear that they would not send written material through the mail.

They both stated that any information needed could only be procured through personal visitations.

Zoumboukas (1981), assistant football coach at the University of Oregon, offered to release their computer program to Ithaca College provided that the Athletic Department at Ithaca College reimburse them for their expense in preparing the program.

Cox (1981), assistant football coach in charge of computer scouting at the University of Tennessee, and DeLeone (1981), assistant football coach at Rutgers University, stated that it was not the policy of their respective football offices to send or give out any information concerning their computer scouting systems.

Not all the information received was negative. There were several institutions that were willing to assist in any way possible. Received were scouting work sheets, sample computer runs, computer forms, terminologies, and graphics.

Summary

Through the review of literature, the information concerning the importance of the scouting program and the advantage of the computer in determining tendencies were delineated. The correspondence section emphasized some of the reasons for the difficulty in the procurement of computer scouting information.

Computer scouting is a very innovative and provocative means of assembling information for future opponents. The computer has forced the coach to upgrade his football program and to use innovations to keep his opponents guessing.

Through the use of the computer, the coach will spend less time in preparation of the game plan and more time instituting it. The most

important aspect of any athletic program is the act of coaching.

Chapter 3

SELECTION OF GUIDELINES

In order to conduct a study concerning computer analysis of football scouting information, it was necessary to establish a series of logical guidelines, which included: (a) selection of scouting data procurement method, (b) determining the information to be included in the data procurement tool, (c) developing the format of the data collection tool, (d) preparing the technical program necessary for computer analysis of data, (e) selection of institutions to be surveyed concerning their presently used methods of data procurement and analysis, (f) development of the letter and (g) tabulation of the information received.

Scouting Data Procurement Method

From the review of literature and the expressed judgment of football coaches and scouts, it was apparent that the general design of the computer scouting system had to be concise, comprehensive, flexible, and provide relative ease of application. It was then necessary to determine what means were available in computer technology which would meet the requirements of the program.

A comprehensive format was developed and tested for effectiveness in breaking down game films. This method proved workable for film analysis. However, it was found that under simulated game conditions the speed at which the scout was forced to collect data made the scouting form difficult to mark accurately and completely. This would seem to be particularly true if one person were required to observe field activity as well as mark the scouting form.

An optical scanner sheet, in mimeographed form, was then designed and tested under the same simulated game conditions. The resulting sheet proved to be most applicable for use in compiling information at the speed in which a scout would be forced to work. Completeness, accuracy, and ease of administration was greatly improved.

Information Selection

In attempting to determine the specific information to be included in the data procurement tool, the following limiting factors were apparent:

1. The restricted amount of time available for recording data prior to and subsequent to each play.
2. The informational restriction of the computer input card.
3. The observational limitations of the scout or scouts.

Following consultation with various coaches and football scouts as well as use of available literature, information was selected which was believed to be necessary to derive the best offensive scouting report under the existing limiting factors. Information concerning the following was included on the data collection sheet:

1. the down and distance
2. the field position
3. the offensive formation and strength
4. type of play run (pass or run)
5. where the play was run
6. type of blocking used
7. the ball carrier and his jersey number
8. the pass receiver and his jersey number
9. the type of pass play
10. the result of the play (yardage gained or lost)
11. the type of shifts or motion used

12. the way in which the team gained or lost possession of the ball
13. the kicker and his jersey number
14. type of kick
15. method of scoring
16. penalty distance and on whom

The Technical Program

The technical language programming was accomplished by a computer programming specialist. A discussion of the language program used was not considered relevant to the purposes of the study and was, therefore, deleted.

Program Testing

The developed scouting system was tested to determine and improve its functionality in simulated game situations. This was accomplished through the use of three, 1980, Ithaca College football game films versus the following opponents: Bloomsburg State College, Albany State University, and St. Lawrence University.

To simulate game conditions, each play on the film was viewed only once and with a 25-second time interval between each play. The 25-second time interval was selected because of the NCAA football ruling that allows the offense 25 seconds to put the football into play, once the official has declared the ball ready for play.

Selection of Institutions to be Surveyed

The institutions to be surveyed were carefully selected based on their winning traditions, league of competition, NCAA division, and geographical location. In all, there was 150 institutions surveyed, encompassing all geographical areas of the United States as well as representing all divisions of play within the framework of the NCAA.

Survey Letter Development

Through consultation with the computer specialist, a letter was drafted to request information pertaining to computer scouting. The information that was determined pertinent to the study was as follows:

1. copy of the work sheet
2. a sample computer form
3. a sample of a computer print-out
4. any graphics used
5. program logic documentation
6. an example run of the scouting system
7. a copy of the institution's football terminologies for the further understanding of the program

Tabulation of Information Received

The information received was carefully scrutinized for similarities to Ithaca College's previous computer scouting program. The information considered similar was separated from information that was not. Then, with the assistance of the Ithaca College football staff, the desired information was extracted from the various programs and adapted to the needs and desires of the football staffs specifications.

Summary

The data collected on computer analysis of football scouting information were studied. The institutions surveyed covered all geographical and NCAA divisions in the United States. The information received was carefully scrutinized for similarities to the existing program, conciseness, comprehensiveness, flexibility, and ease of application. All data and information were reviewed and analyzed according to the guidelines of the Ithaca College football staff.

Chapter 4

THE SCOUTING SYSTEM

The optical scanner sheet was determined to be the most viable means of computer scouting. The data procured through this method were simple and concise. The following categories for essential data procurement were considered: sequence, play number, down, distance, situation, hash mark, zone, yard line, ball carrier or receiver, motion, hole hit or pass play, pass patterns, pass result, and penalties. A work space was provided to diagram each play for future reference.

Sequence refers to a connected series of plays. The sequence begins with the first offensive play and ends when the offensive team relinquishes possession of the football. The offense can relinquish possession through one of the following ways: punt, interception, fumble, downs, safety, time, touchdown, field goal, or attempted field goal. By determining play sequences, the scout may discover a certain play pattern.

The number of plays that occur in a sequence are of considerable importance to the scout, in that it will describe whether the opponent is a ball control or an explosive big play team. The ball control team will use several plays, usually more than eight to move the football more than 50 yards. The explosive big play team would use two or three plays to move the football that same 50 yards. During the preparation period for an opponent, the knowledge of whether the opponent is a ball control or a quick explosive team will effect the scouting team's game plan.

Down and distance are two categories that somewhat parallel each other. Teams have tendencies to use the same or successful plays under

similar situations throughout an entire football season. By scouting an opponent's down and distance, the formulation of situational tendencies becomes clearer. For example, team A on second down and 10 yards to go has run the ball twice and had thrown the ball 12 times. From this example a definite tendency can be formulated for team A on second down and 10 yards to go.

In simplifying the situational tendencies even further, the situation category was added to the scout sheet. This situation category has three subdivisions to further classify the necessary information. The three subdivisions are normal, short, and long situation. It has been estimated that the average gain per play, is approximately three to four yards. This information is important when the three sub-categories are considered. First down and 10 yards to go, second down and 7 yards to go, and third down and 3 yards to go are normal football situations. Long situations would be first down and 15, second down and 10, and third down and 7. The short situations would be first down and 5, second down and 4, and third down and 1. Any situation that varies from the set norms is considered either a long or short situation. As was stated earlier, teams have a tendency to repeat successful plays and often use them under similar situations. This information is vital in the preparation of a game plan.

Directional tendencies are prevalent among college football teams. The means the scout employs to determine directionality tendencies is to assess if any hash mark tendencies exist. A hash mark tendency will inform the scout to any directional tendencies an opponent may have. For example, team A, with the football on the left hash mark, ran the football 15 times to the right and only once to the left. From this example the scout would draw the conclusion that team A has a definite

tendency to run to the right or the wide side of the field from the left hash mark. When the ball is in the middle of the field, the scout can formulate a more definite strength tendency. With the field balanced (i.e., ball between the hash marks), the offensive team will have a tendency to go in one direction more than in the other. This information will assist the scout in determining if the opponent has a right or left directional dominance.

To further define the tendencies that an opponent may have, the situational section of the scouting sheet is divided into one more section, the field zones. The field zones consist of four areas or zones on the field. These zones are from the goal line to the 20-yard line, the 20-yard line to the 50-yard line, the 50-yard line to the 20-yard line, and the 20-yard line to the goal line. These selected field divisions were based on offensive play tendencies. Offenses tend to be more conservative from the goal line to the 20-yard line than from the 50-yard line to the 20-yard line. Teams tend to have special formations and plays designed for when they enter the scoring zone on the field (i.e., from the 20-yard line to the goal line).

These four situational tendency sections are individually and collectively important to the scout. It is from these tendencies that the main thrust of the scouting report is based. Without the presence of this situational section of the scouting report, the scout has little information on which to base his defensive game plan.

The location of the football is important to the scout merely for reference information. The yard line assists the scout in determining the amount of yardage gained or lost on a given play. The exact yard line is important to the scout when the offensive team is in the scoring zone.

This information will assist him in determining what plays and formations are used from what distance.

The ball carrier and receiver section is important to the scout in the determination of favorite ball carriers and receivers. This information will also assist the scout in the procurement of jersey numbers for these "dangerous" opponents. Offenses have a tendency to repeat successful plays and to use successful players often. By determining play and play tendencies, the scout will be better prepared to formulate a defensive game plan to stop a certain ball carrier or receiver.

The motion section of the scouting report is a general information collection device. This information is not as important to the formulation of the defensive game plan as is notation of favorite plays or players. This information, however, is important in the determination of an opponent's style of play. The use of motion indicates that the opponent tends to use deception in their offense. This information should be brought to the attention of defensive players, so as to prevent any unnecessary penalties due to offside or encroachment. Any minor adjustments that may be necessary to make due to the change in formation strength because of motion can be made during the week of practice, rather than on the sidelines during a game.

The hole hit or the pass zone hit are of vital importance to the scout. This information is essential in the formation of the defensive game plan. This information will provide the scout with the tendencies necessary to determine favorite areas of attack. Knowledge of these favorite areas of attack will definitely assist the scout in the formulation of the defensive game plan. This information will inform the scout of areas which need to be defended and will provide

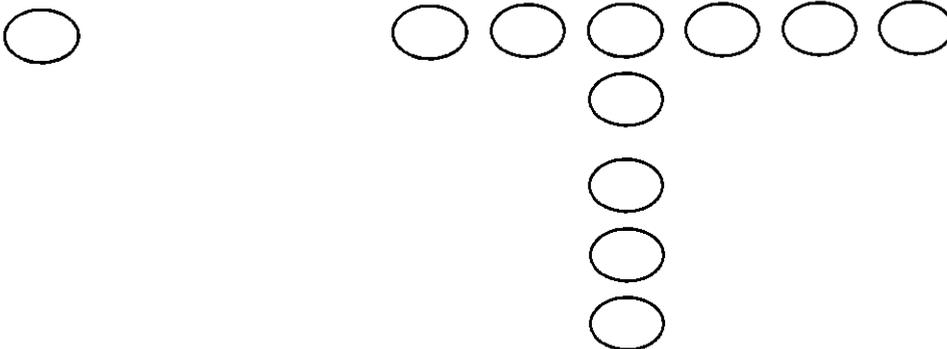
some ideas of how to defend them.

Yardage gained or lost will provide the scout with the information necessary to determine long gaining plays, which are of concern to any defense. The determination of these long gaining plays will assist the scout in formulating strategies to stop them. Often times, these long gaining plays are situational plays and will be discovered in the situation and hash mark section of the scouting reports. The manner in which an opponent loses yardage is also of importance to the scout. This information will assist the scout in the determination of the opponent's weaknesses.

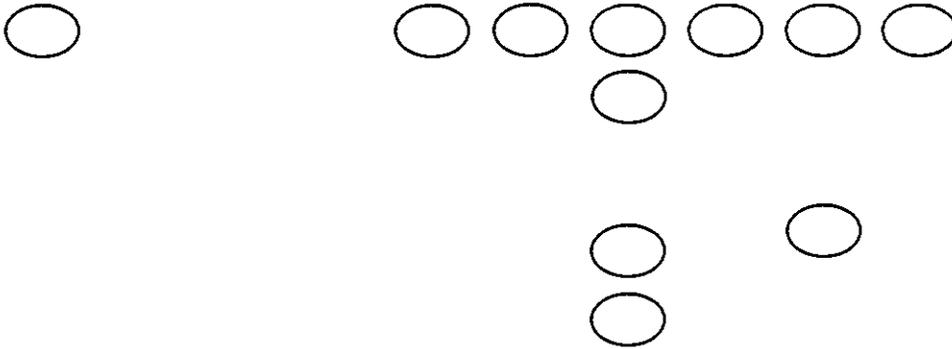
The series begin and the series end section of the scouting report are used strictly to initiate the beginning and the end of a given sequence of plays. Without this section, the computer could not discriminate between sequences.

The formation section of the scouting sheet will be described in the following diagrams:

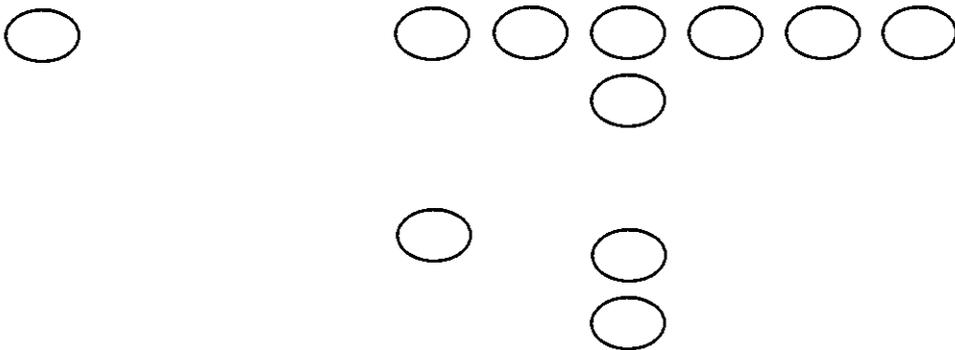
I 10 formation is three backs in a straight line behind the quarterback with a tight end and a wide receiver.



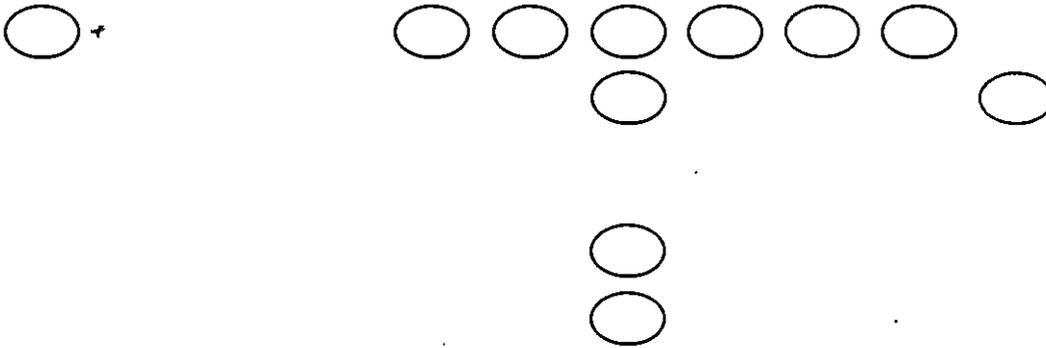
I 400 formation is two backs in a straight line behind the quarterback, one back behind the tackle on the tight end side and a wide receiver on the opposite side from the tight end.



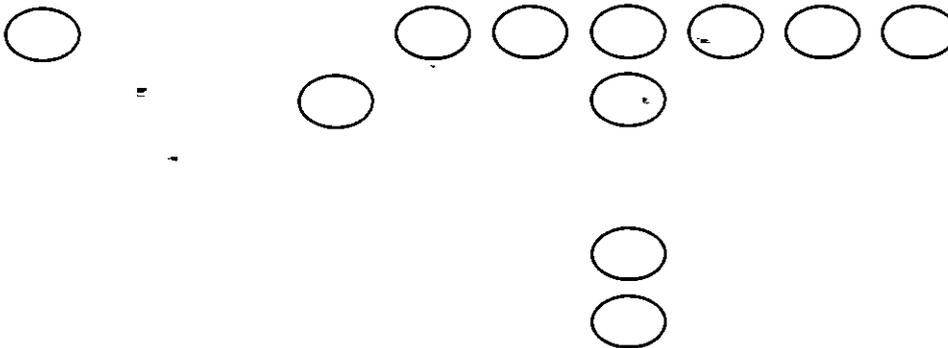
I 500 formation is two backs behind the quarterback, one back behind the tackle on the wide receiver side and a tight end on the other side.



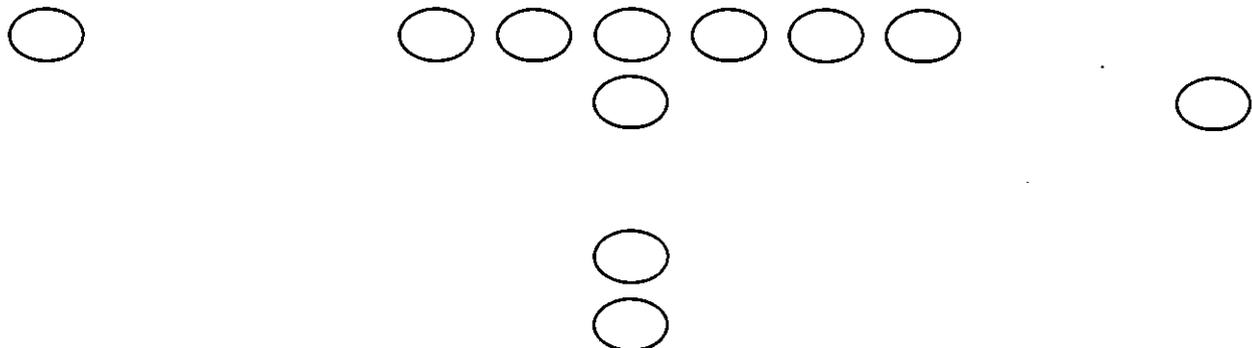
I 600 formation is two backs behind the quarterback, one back behind the tight end on his outside shoulder and a wide receiver opposite.



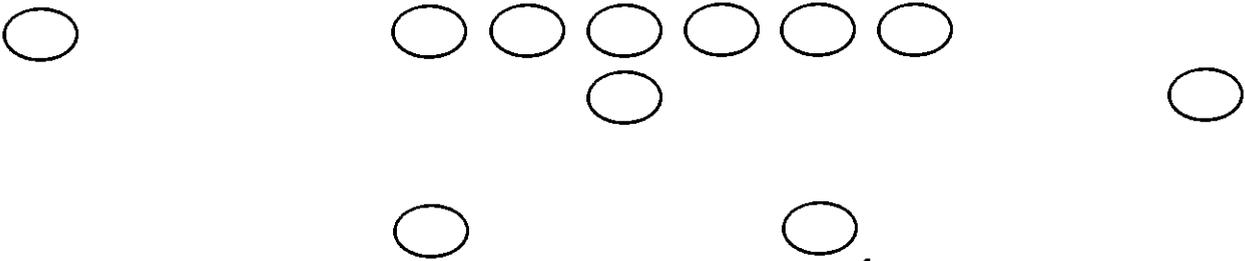
I 700 formation is two backs behind the quarterback, one back behind the imaginary alignment position of a tight end on the wide receiver side, with the tight end opposite.



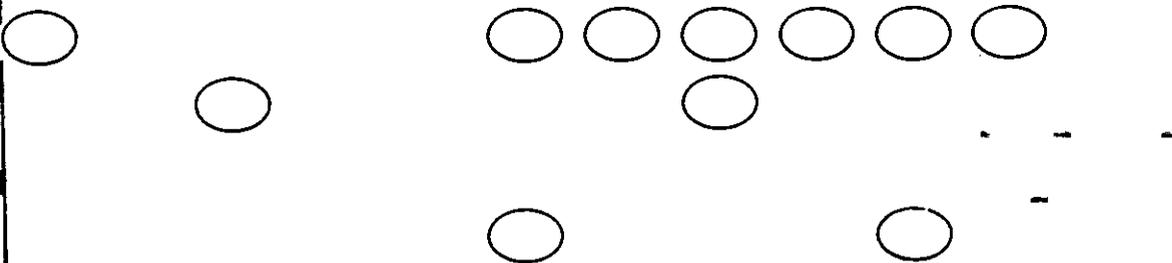
I 800 formation is two backs behind the quarterback, one back aligned as a wide receiver to the tight end side, with the wide receiver opposite.



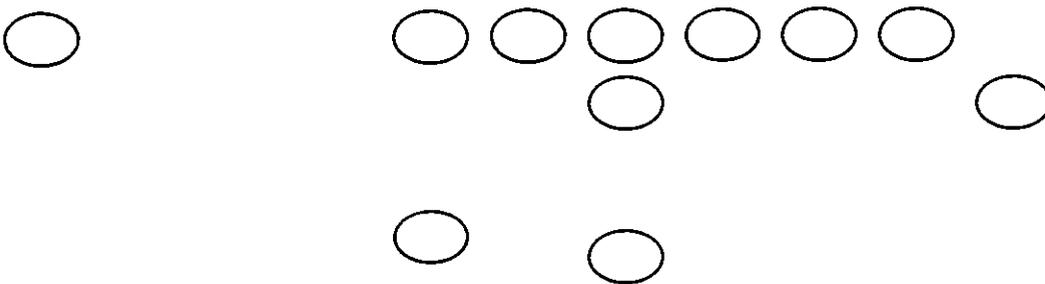
I 800 formation is two backs aligned behind the guards, one back aligned as wide receiver to the tight end side, with a wide receiver opposite.



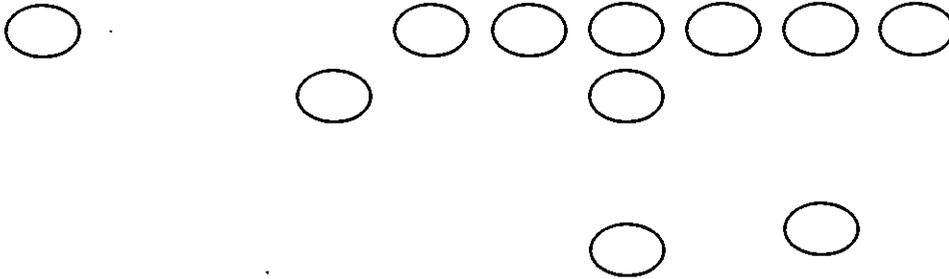
I 900 formation is two backs aligned behind the guards, one back aligned six yards inside the wide receiver, with a tight end opposite.



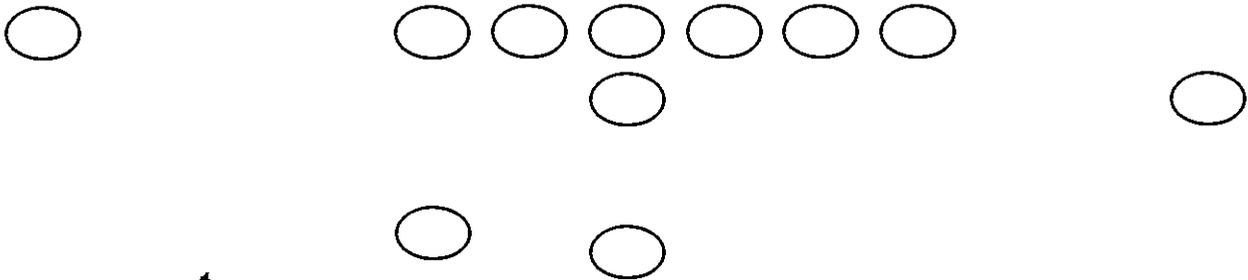
Normal 600 formation is one back behind the quarterback, one back behind the guard opposite the two receiver side, one back aligned behind the tight end on his outside shoulder, with a wide receiver opposite.



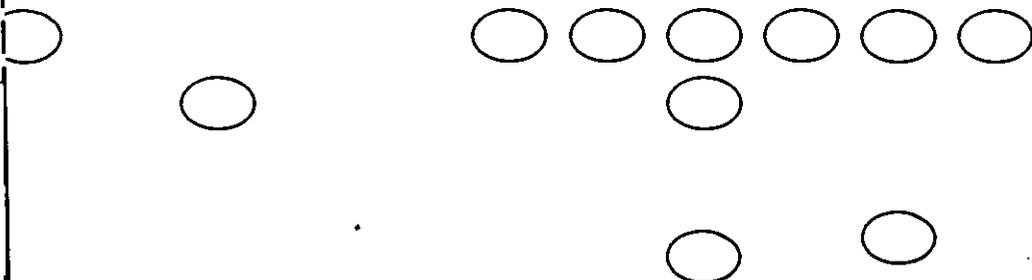
Normal 700 formation is one back behind the quarterback, one back behind the guard opposite the two receivers, one back aligned behind the imaginary line up position of the tight end, with the tight end opposite.



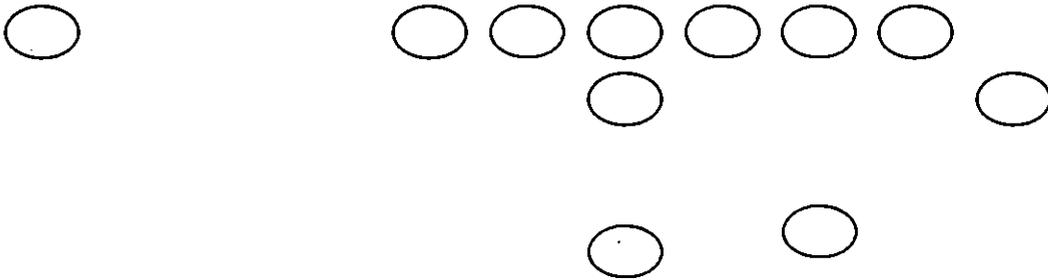
Normal 800 formation is one back behind the quarterback, one back behind the guard opposite the two receivers, one back aligned as a wide receiver to the tight end side, with a wide receiver opposite.



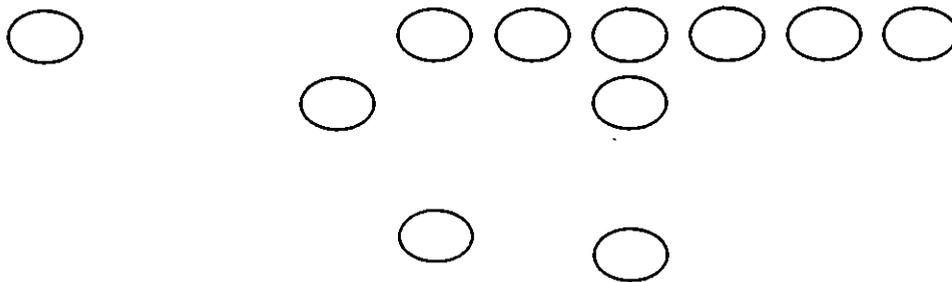
Normal 900 formation is one back behind the quarterback, one back behind the guard opposite the two receivers, one back aligned six yards inside the wide receiver, with a tight end opposite.



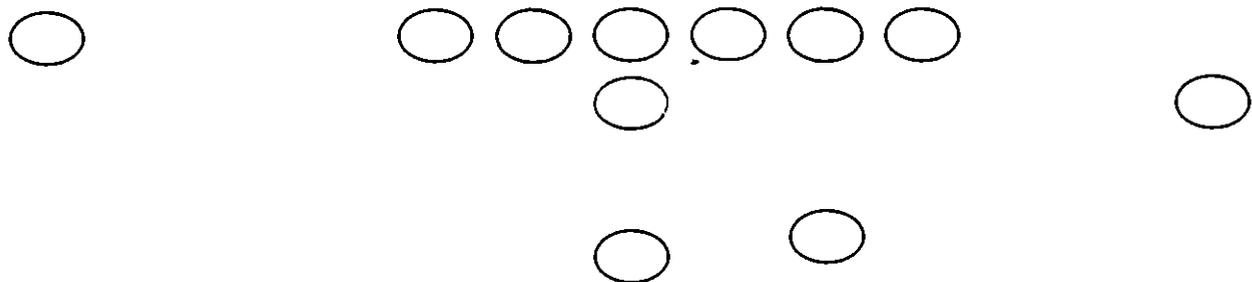
Power 600 formation is one back behind the quarterback, one back behind the guard on the two receiver side, one back aligned behind and on the outside shoulder of the tight end, with a wide receiver opposite.



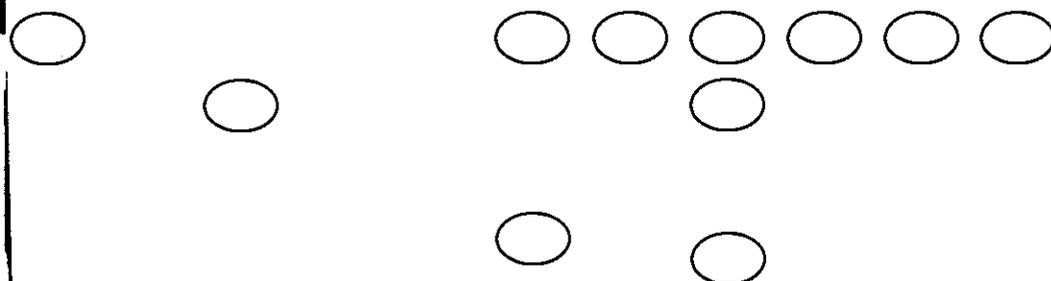
Power 700 formation is one back behind the quarterback, one back behind the guard on the two receiver side, one back aligned behind the imaginary line up position of the tight end on the wide receiver side, with a tight end opposite.



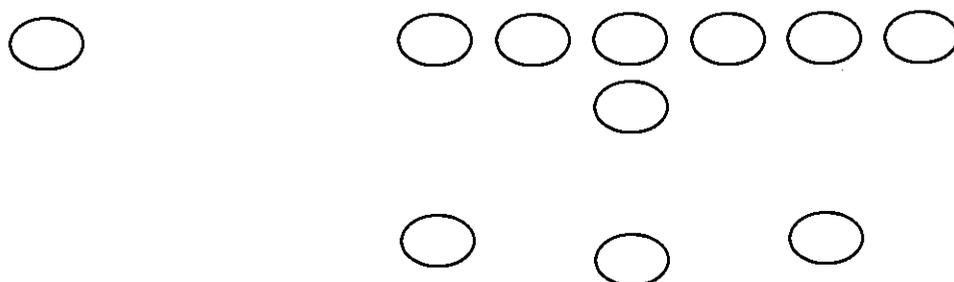
Power 800 formation is one back behind the quarterback, one back behind the guard on the two receiver side, one back aligned as a wide receiver to the tight end side, with a wide receiver opposite.



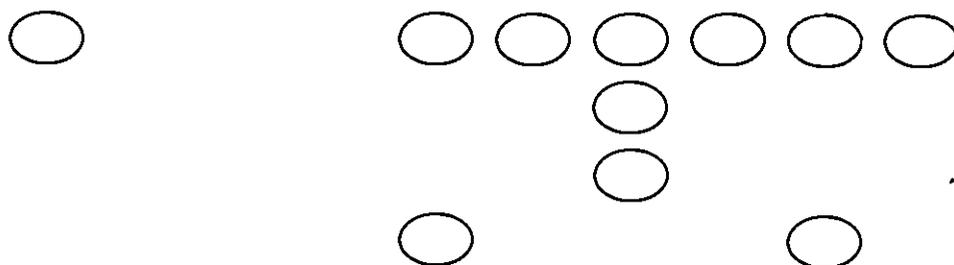
Power 900 formation is one back behind the quarterback, one back behind the guard on the two receiver side, one back aligned six yards inside the wide receiver, with a tight end opposite.



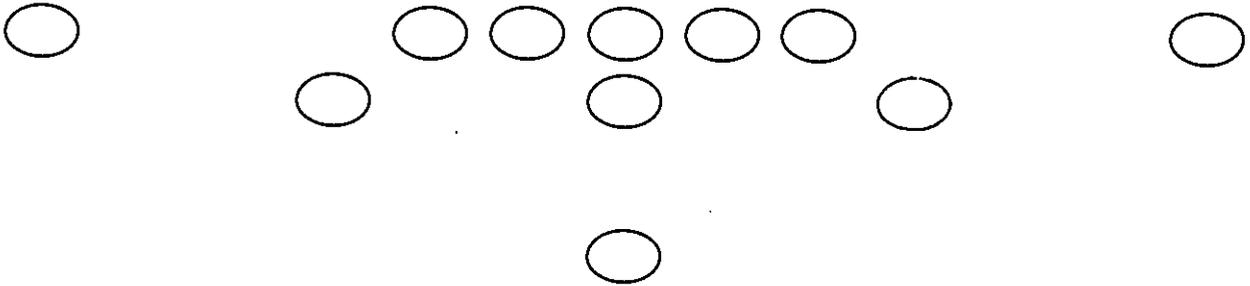
T formation is one back behind the quarterback, one back behind each of the two tackles, with a tight end to one side and a wide receiver to the other. Three backs in a straight line.



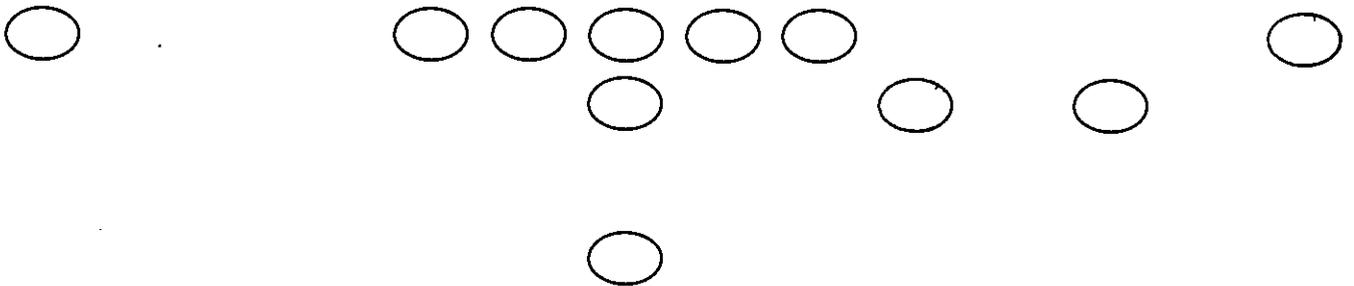
Wishbone formation is one back behind the quarterback, one back behind each of the guards, with a tight end to one side and a wide receiver to the other. The two halfbacks align deeper than the fullback.



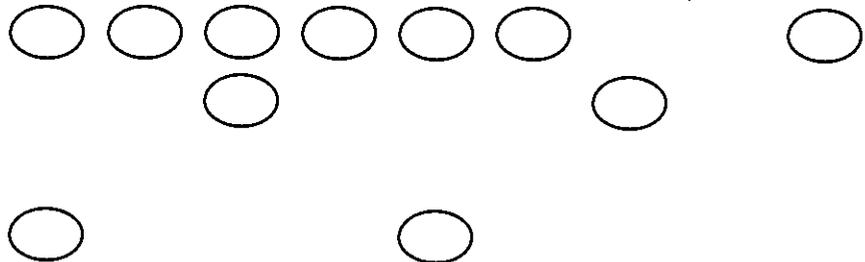
Double wing formation is one back behind the quarterback, the other two backs are aligned behind the imaginary line up position of the tight ends, with two wide receivers.



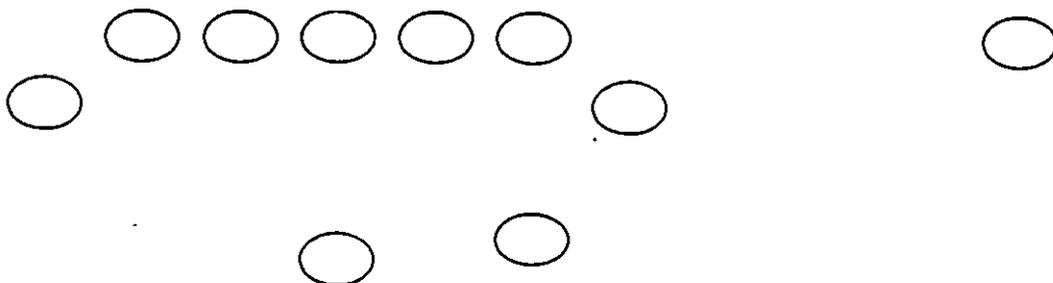
Trips formation is one back behind the quarterback, one back aligned behind the imaginary line up position of the tight end, one back aligned six yards inside the wide receiver, with a wide receiver opposite.



Unbalanced formations occur any time a football player lines up in the tight end alignment position and there is a wide receiver on the same side of the field on the line of scrimmage.



Shotgun formation is any formation in which the quarterback does not assume his normal alignment. Double wing formation with the quarterback aligned at seven to eight yards deep is a common example.



The above mentioned formations are the 25 most prevalent formations in college football today. Any variation from the aforementioned formations could be added to the section in the blank spaces provided at the end of the scouting sheet.

The 30 most prevalent running plays are listed in the next section of the scouting sheet. These plays may not represent all the possible running plays, however, they are the plays most often used. The following is a description of these 30 running plays:

1. A dive is a straight handoff to any back, without any lead blocking by another back.
2. A counter dive is a misdirection step by a back, reverse direction, and a straight handoff to any back without lead blocking.
3. A veer is a three-phase option play, where the quarterback makes his handoff decision based on the play of the defensive tackle.
4. The outside veer is a three-phase option play where the quarterback makes his handoff decision based on the play of the defensive end.
5. The option is a two-phased play where the quarterback makes his handoff decision based on the play of the defensive end.

6. The counter option is a two-phase misdirection play where the entire backfield starts in one direction, turns and runs the option play in the other direction.

7. The speed option is a two-phase option play where the quarterback makes his handoff decision based on the play of the defensive end and the fullback runs to block the defender responsible for the offensive pitch man.

8. The counter speed option is a two-phase misdirection play where the entire backfield starts in one direction, turns and runs the speed option play in the other direction.

9. The trap play is a deception play on the part of the offensive line. One guard will not block his assigned defensive lineman while the other guard will pull out and block the unblocked defensive lineman on the opposite side. The backfield will run a dive play, with the dive back following the pulling or trapping guard.

10. The trap option is simply a combination of the trap play and the option play. The guard will trap and the dive back will follow. The quarterback and halfback will run the option play with the quarterback reading the play of the defensive end.

11. The sweep is a direct handoff to the halfback with the fullback and both guards pulling around one end to lead the play.

12. The toss sweep is the same action by the play side guard and fullback as in the sweep. The quarterback will toss the football to the halfback, thus allowing him a running start to the corner.

13. The isolation play is a power move by the offense. In this play the offensive line will leave a linebacker unblocked so that the fullback can lead the halfback through the hole and block the free

linebacker. This play allows the offensive line to double-team block a troublesome defender.

14. The sprint draw is a deception play where the quarterback fakes a sprint pass and then hands the football off to the halfback.

15. The draw play is a deception move by the quarterback where he fakes a drop back pass and then hands the ball off to the fullback.

16. The quarterback draw is a deception move by the quarterback where he takes three steps back, as if he were preparing to pass, and runs the ball up the middle.

17. A sneak is a short yardage play by the center and the quarterback where the quarterback takes the center exchange and run forward following the block of his center.

18. A power is an off-tackle slant play where the fullback leads the halfback through the hole and blocks the first defender he sees.

19. The lead option is a two-phased option play where the quarterback makes his handoff decision based on the play of the defensive end and the fullback blocks the defender responsible for the pitch man.

20. The loaded option is a two-phase option play where the quarterback makes his handoff decision based on the play of the defensive end and the fullback blocks the defender responsible for the quarterback.

21. The belly is a fullback dive play from the normal or the power formations.

22. The belly option is an option play from the normal or the power formations.

23. The reverse is a misdirection play by the offense where the wide receiver will intercept the pitch in the option or take a handoff from the halfback in a sweep and run around the opposite end from the

original direction of the play.

24. The quick pitch is a speed move to get the halfback outside the end as fast as possible. In this play the quarterback will pitch the football to the halfback, who is running for the corner, and the play side tackle will pull out and around the end to lead block.

25. The sprint out is a speed move to the corner by the quarterback. In this play the quarterback will sprint to the corner and if he breaks containment he will run; if he doesn't he will pass the ball. The quarterback comes out looking for the run.

26. The roll out is a play that is designed to be a pass first, but if the opening is there to run, the quarterback should do so. The action of the roll out is much more controlled than that of the sprint out.

27. The veer T is simply the outside veer play with the play side tackle pulling out to block the defender responsible for the offensive pitch man.

28. The veer G play is simply the outside veer play with the play side guard pulling out to block the man responsible for the pitch.

29. The bootleg is a misdirection play by the offense where the entire team, with exception of the quarterback and the action side guard, run in one direction and the guard and quarterback go in the opposite direction with the football.

30. The tackle trap is a deception play on the part of the offensive line. One tackle will not block his assigned man while the other tackle will pull out and block the unblocked defensive lineman on the opposite side. The backfield will run a dive play with the ball carrier following the pulling or trapping tackle.

Space has been provided at the end of this section for any other running

plays which may not appear on the above mentioned list.

There are several different types of passing actions, all are mentioned in the next section of the scouting sheet:

1. A screen pass is a deception play by the offense to make the defensive line think that they have beaten the block of the offensive line. Once the defensive line has been drawn into the trap, the quarterback will dump the ball off to a running back.

2. The sprint pass is a fast move by the quarterback in an attempt to put pressure on the contain person, and force the secondary to adjust for the run. Once the secondary has begun to adjust, the quarterback will look for any receiver.

3. The roll out pass is a controlled action by the quarterback in an attempt to force the secondary to rotate.

4. The boot pass is a sprint pass with the back side guard pulling and lead blocking for the quarterback.

5. The play action pass is a run fake to hold the linebackers, and a three-to five-step drop to pass. This is a quick release pass.

6. The halfback option pass is a pass thrown by the halfback off the option or sweep action. The offense fakes the running play and at the last minute the halfback pulls up and makes the pass.

7. The drop back pass is a seven-step drop by the quarterback; this is not a quick hitting pass. A drop back is one that is used when time is available to complete the play.

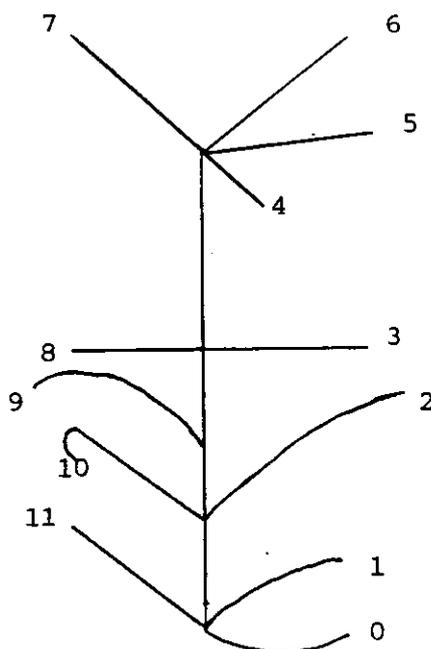
8. The throw back pass is a deception play by the offense. In this play the offense's action is in one direction and the quarterback turns and throws the ball back across the field, opposite to the direction of the defensive flow.

With the exception of the drop back pass, all the above mentioned passing

action are run in both directions.

With all the passing action there must be pass receiver routes.

These pass patterns are as follows and designated by the numbers in the diagram.



0. The flare pattern is run only by backs and is behind the line of scrimmage.

1. The flat pattern is a short pattern run primarily by a back. The attempt is to pass underneath the zone coverage.

2. The bend out pattern is a speed pattern run by an outside receiver.

3. The out pattern is a deception pattern attempting to make the defender believe that the receiver is running a deep pattern. Once the defender turns to run deep, the receiver makes a square-out move to the sideline.

4. The come back is a similar deception pattern to the out. When the defender turns to run, the receiver will make a slight outward break back towards the quarterback.

5. The angle is a deeper version of the out. The angle differs from the out in that the cut is not a squared-corner; it occurs at about

120 degrees, thus making it a faster and a deeper pattern.

6. The flag pattern is the deepest of the sideline patterns. In this pattern the receiver runs straight up the field until the defender turns to run; at this point the receiver makes his cut and runs for the end zone flag.

7. The post pattern is the deepest of the middle of the field patterns. In this pattern the receiver runs straight until the defender turns to run then he makes his cut and runs for the goal post.

8. The in pattern is the same pattern as the out, with the exception that it is run to the middle of the field.

9. The curl pattern is the same as the bend out pattern, with the exception that it is run towards the middle of the field.

10. The slant hook pattern is a diagonal cut towards the middle of the field; once the receiver has found an open area, he will turn back in towards the quarterback.

11. The diagonal pattern is a quick diagonal cut towards the middle of the field.

12. The seam pattern, even though it does not appear on the passing tree, is a vital pattern to run against the zone secondary. The seam pattern is run to a certain area; it is the receiver's job to find the opening.

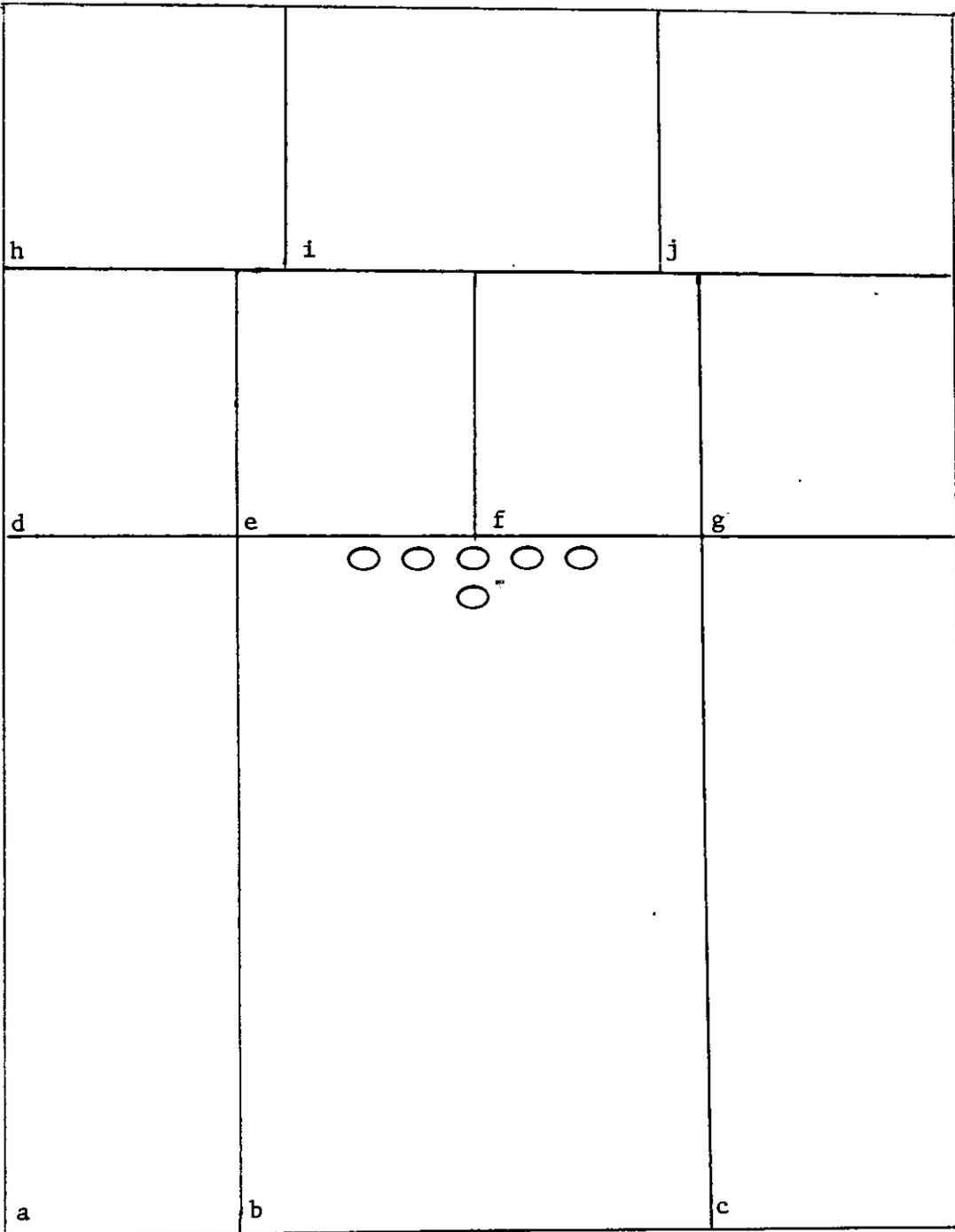
13. The drag pattern is very similar to the diagonal pattern. The difference is that the drag is a delay pattern. The receiver will attempt to deceive the defense by blocking first, then releasing into the pattern.

14. The screen pass does not have a set pattern. However, for the computer's information the screen is listed under pass play and pass pattern on the scouting sheet.

The pass results are also of importance to the scout. On the scouting sheet there are five possible outcomes of any pass play. The pass may be completed, intercepted, incompletd, the quarterback may have to scramble, or be sacked for a loss. This information will assist the scout in determining the effectiveness of the opponent's passing game.

The last section of the scouting sheet is a general information category about penalties. In this section all the penalties that are committed are recorded. This information can be useful in preparing a team for a game in which the opponents are known to be prone to penalties.

In the lower right corner of the scouting sheet there is a work space provided to diagram plays. This area is of most importance in the determination of blocking schemes. Listed in this area are the various pass zones. On the following page is a representation of the scouting sheets work space.



Chapter 5

RECOMMENDATIONS

The following recommendations are suggested for future projects in the area of computerized football scouting:

1. Devise a computerized scouting program for defensive football, including alignments, secondary coverages, stunts, and short yardage play.
2. Conduct a study to access the similarities and differences between computer scouting information and scouting information procured manually.

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