More on Scanning

1. Scanning - The ALERT manual provides a good coverage of scanning on pages 17-19. Some basics that need to be stressed are the importance of scanning the bottom of the pool, covering entire area within 15 - 20 seconds, and looking at faces and discerning activities of individuals during the scan. Each "sweep" should end with a check of the other lifeguards on duty to be sure that they have not become involved in another activity and to receive any signals.

2. Principles of Scanning - The most common approach to teaching scanning has been to assume that if a lifeguard can see, she can scan. Scanning is a much more complex skill than people often realize. It requires an understanding of the two vision systems used by humans and training to use both systems effectively. A lifeguard needs to be aware of critical signals to which she will have to attend. It also requires the use of short- term memory as well as a cognitive (thinking) process. Another requirement for effective scanning is an understanding about how the lifeguard's scanning effectiveness is affected by positioning and interference activities.

3. Intensive (zone) Scanning - Intensive or zone scanning systems are generally used in larger swimming pools where there is more than one lifeguard. Zones should be established so that a lifeguard is not required to scan more than 180 degrees. Zones should also include overlap in high-risk areas and should be incorporate a rotation system. Zone scanning systems should be documented to minimize confusion and to ensure that ALL areas are being covered.

4. Extensive Scanning - Extensive scanning is the term for one lifeguard supervising the entire swimming area. This system is of course limited by the size of the swimming pool and the number of bathers.

5. Combined Approach - The combined approach to scanning is used when there is a need or advantage to having a lifeguard do extensive scanning over top of lifeguards providing zone coverage. This is sometimes done from the top of a diving tower, lifeguard chair or other vantage point.

6. Cognitive (Thinking) Process - The lifeguard is unable to scan effectively if she does not think about what she is seeing. She must be aware of which vision system is being used and must relate the incoming images to an understanding about critical signals and what responses may be required. The lifeguard determines what information needs attention and what information should be ignored.

7. Positioning - Lifeguard positioning can have a major impact on the effectiveness of a lifeguard's scan. These factors should be considered when looking at how the lifeguard's position affects her scan:
• arc of the scan
• blind spots
• distance to farthest part of the pool or supervised area - relates to response time & ability to see facial features

• lighting - glare
• location of other lifeguards
• factors such as noise or heat which may affect the lifeguard's ability to remain vigilant.

Reducing the arc of the scan, ie; 90^0 versus 180^0, 270^0 or 360^0 allows the lifeguard to maximize the use of focal vision and minimize the amount of eye, head or body movement required to regularly scan all of the supervised area. A lifeguard position with a 180^0 arc will place all of the supervised area within range of the lifeguard's peripheral vision. Scan arcs greater than 180^0, position part of the pool outside the normal range of vision. Scan arcs should be considered when choosing lifeguard stations. However, other factors such as blind spots, glare and the distance to the farthest point in the lifeguard's area of responsibility will also have to be taken into consideration.

8. Interference Activities - Many activities interfere with a lifeguard's ability to maintain an effective scan. Talking to customers or other staff is the most common interference activity. When the City of Edmonton did a study of lifeguard performance, the observers noted that most lifeguards were not able to scan effectively while talking to someone. In fact, most lifeguards did not scan at all during this communication. Other types of activities such as pool or equipment maintenance were also found to interfere with effective scanning.

9. Critical Signals - A critical signal is a signal which requires a response by the lifeguard. For lifeguards, some critical signals such as the characteristic movement pattern of many drowning nonswimmers would require that the lifeguard respond by rescuing the victim. Another critical signal such as running on deck would require that the lifeguard respond by educating the customer about the hazards of slippery pool decks. The lifeguard must be able to recognize a critical signal and respond appropriately.

This would seem to be a pretty easy thing to do. However, recognizing critical signals is complicated by the fact that most of the activity at a pool does not involve critical signals - just noise and harmless activities that might distract the lifeguard. The situation gets even worse when you notice that some types of activities may resemble a critical signal. A thrashing child at play may appear similar to a drowning nonswimmer. These similar signals occur much more frequently than the critical signals. This can result in the lifeguard becoming desensitized to the critical signal and possibly not responding to a drowning victim.

10. Short-term Memory - The lifeguard uses short-term memory to monitor situations that might require intervention. This could include the swimmer on the bottom of the pool. When the lifeguard sees a swimmer on the bottom, she may make a mental note to watch carefully during subsequent scans. These mental notes could also include individuals such as disabled persons that the lifeguard may want to monitor in order to provide assistance if required.

11. Vision Systems - The human eye has two types of vision systems which come into play during scanning - peripheral and focal vision. Each vision system has unique characteristics which are used for different tasks during the scanning process.

Characteristics of Peripheral Vision

- Wide angle or arc of vision - can see a very large area. Usually most or all of the area of supervision.
- Stationary object - peripheral vision is not sensitive to stationary objects. An object ie; body that is not moving may seem to disappear from the field of vision or will not be recognized as being important.
- Movement - very sensitive to movement. Able to recognize characteristic movement patterns such as that of a drowning nonswimmer. Movement triggers a response to look at the moving object.
- Detail - unable to recognize detail such as facial expressions.

Characteristics of Focal Vision

- Narrow angle or arc - operates through a narrow arc of less than 45^0, sharpest vision occurs in an arc of $1\text{-}2^0$. This is much less than the usual area of supervision for a lifeguard. Distance affects how large an area can be seen when focal vision is focused on an object.
- Detail - able to see fine detail clearly at a distance of at least 10 metres. Should be able to clearly recognize facial expressions anywhere in the pool area.
- Movement - able to clearly see a moving object if able to track with the object. May not be able to clearly see the detail of a fast moving object.

Implications for Scanning - These different characteristics have serious implications for a scanning lifeguard. The 2 types of vision are designed to be complementary and work together. The lifeguard must be aware of the characteristics of peripheral and focal vision and incorporate this knowledge into the design of her scanning methods. A scanning system that relies primarily on peripheral vision will miss a stationary body on the pool bottom that would be recognized by the focal vision. While emphasizing the use of focal vision is important, the peripheral vision will still be active and able to respond to critical signals.

Observations of many lifeguards have shown that most lifeguards rely primarily on their peripheral vision to recognize situations which require lifeguard intervention.