SENET SOLUTION – PLAY THROUGH

For convenience, label the throws 1A-F, 2A, 3A-C, 4A-D and 5A-I. In notation, 1 > 2 means a move from square 1 to square 2, and 1 x 2 means an attack from square 1 to square 2.

First, deduce that there are exactly four complete turns, all of which are implied by the given diagrams.

Per the rules, a turn may only end after a throw of 2 or 3, or if there is no possible move or attack. There are only four throws meeting any of those criteria (2A, 3A, 3B, 3C), so there are four complete turns (it is possible at this point that there are "leftover throws" for an incomplete fifth turn, but we will see later that that's impossible).

The second diagram shows the position at the end of one of Black's complete turns. That same diagram *also* shows the end of White's subsequent complete turn, since, per the moving and attacking rules, no move or attack is possible for White from this starting position. Therefore, the third diagram shows the position at the end of a different, later White turn. There must be a complete Black turn in between those two complete White turns, and that accounts for our four complete turns: Black, White, Black, White (with leftover moves, if any, coming after). We'll examine each turn in order.

*Starting String:* B L A C K W H I T E

Black's First Turn

It is given that what we now know to be Black's first turn comprises exactly five throws. To move from diagram 1 to diagram 2, Black's pieces advance a total of 15 spaces forward. Conversely, White's pieces must go a total of 15 spaces backward. Therefore, all five of Black's throws are attacks.

Black's turn must end with 2A, 3A, 3B or 3C, and of these, only 3A is an attack; that will be T(hrow)5. That leaves 12 spaces to be accounted for in the first four throws, in increments of 1, 4 or 5. The only combination that works mathematically is 1 + 1 + 5 + 5, so Black's first four throws will be some set of 1A-D and 5A-C. Of these, the letter string conditions only of 5A can be met, thus it must be T1. Similar process of elimination at each step results in the following sequence:

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|---|---|
| T1. 5A | E A C K W H I T |
| T2. 5B | E A C K L M N O L M N |
| T3. 1A | E G R O U P A C K L M N O L M N |
| T4. 1D | E R N G O U P A C K L M N O L M |

At this point, we need to assign specific pieces to these throws. The pieces starting on 1 and 3 must use the 5-attacks; otherwise, they will be trapped behind adjacent, unattackable White pieces. If the piece on 3 goes first, the piece on 1 will be trapped behind an impassable block of three adjacent White pieces. Therefore:

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|---|---|---|
| T1. 5A | 1 x 6 | E A C K W H I T |
| T2. 5B | 3 x 8 | E A C K L M N O L M N |

The White piece on 10 is now the only attackable piece, so

| | | |
|---|---|---|
| T3. 1A | 9 x 10 | E G R O U P A C K L M N O L M N |
| T4. 1D | 8 x 9 | E R N G O U P A C K L M N O L M |

Which leaves one option for 3A, which allows us to apply that instruction:

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|---|---|---|
| T5. 3A | 5 x 8 | E R N G O U P E A E C K L M N O L M |

White's First Turn

Per the rules, White can't do anything at all, so we must use 2A here:

T6. 2A no move E R N G O U P E A E C K R M R O L M

Black's Second Turn

Although the board position at the conclusion of Black's second turn is not given, we can deduce it, as Black has two "goals".

First, Black must separate all of his pieces. It is given in 3B that all but one of Black's pieces will have been attacked, and White's next turn is the only turn on which this can happen. To allow this, none of Black's pieces can be adjacent to each other by the end of his turn.

Note that a piece on the ankh (space 15) must be attacked at some point, per throw 5D. It would be impossible for Black to attack this space using a "leftover" throw in a turn after the board position shown as the end of White's second turn. Therefore, this attack must occur during White's second turn, meaning that Black's second goal is to get a piece on this space (using 4D).

Separating all of Black's pieces, ending with one on 15 -- that is, going from (at minimum) 6/7/8/9/10 to 6/_/8/_/10/_/12/_/_/15 -- requires a total advancement of at least 11 spaces. In White's next turn, White's pieces will need to advance exactly 50 total spaces (as countable from the given diagrams). There are 61 total advancements accounted for in all the remaining throws; therefore, Black will advance at most 11 spaces on this turn. Since this is also the minimum advancement, Black will advance exactly 11 spaces. Note that this now precludes the existence of leftover throws after the end of White's second turn.

Since all of Black's pieces are further ahead than White's pieces at this point, all of Black's throws this turn will be moves, rather than attacks. From the available pool of 1, 3, 4 and 5-moves, exactly one must be a turn-ending 3, leaving 8 spaces to account for. There aren't enough 1-moves to allow a 1+1+1+1+4 or 1+1+1+5 combination, so Black's turn must be two 4-moves followed a 3-move.

The second of these 4-moves must be 4D 11 > 15, as no piece can do this on the first throw. The first 4 move must therefore be 7 > 11. 4B is not a possibility, and no black pieces have been attacked yet, eliminating 3B as the last move, so 3C will be last, and it must be 9 > 12 to fully separate Black's pieces. So

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|---|---|---|
| T7. 4C 7 > 11 | E R N G O U W P E A E C K R M R O L | |
| T8. 4D 11 > 15 | E R N G O U W P E A R L Y E C K R M R O L | (pear, lye) |
| T9. 3C 9 > 12 | E R N G O U W P L A T E E C K R M R O L | (early, late) |

White's Second Turn

White has a lot of ground to cover now, including attacking four of Black's pieces. As we've seen, this will use up all remaining throws. In many cases, there will only be one string modification possible, which will dictate which throw is used. The exception is 4A, which reverses the string: this is rarely specifically precluded as an option. If this is used too early in the throw sequence, however, it should quickly become apparent that you've reached a dead end from which no other string conditions can be met.

That aside, the only possible string modification is 5H, which dictates which piece to use (assume from now on that if no explanation is given for choosing a particular throw, it is because it is the only possible string modification).

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| T10. 5H | 2 > 7 | E R N G O U W P L A T T E C K R M R O L | (plate, latte) |

The next sequence, moving some combination of pieces, must be

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|---|---|---|---|
| T11. 1B | | E R N G O U W N L N T N E C K R M R O L | (Platte) |
| T12. 5G | | F E R N G O U W N L N T N E C F R M R O L F | (neck) |
| T13. 4B | | F E [U or O] R N G [O or U] W N L N T N E C F R M R O L F | (fern) |

The 1-attack on T11 could originate from 5 or 7 but note that the T13 move must originate on either 6 or 7 (a 4-move is not possible from 2, the only other plausibly inhabited space corresponding to a vowel in the string). If T11 is 7 x 8, that will put two unattackable Black pieces on 6 and 7, making T13 impossible. Therefore

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| T11. 1B | 5 x 6 | E R N G O U W N L N T N E C K R M R O L | (Platte) |

The next 5-move can originate only from 4 or 6, but the latter would also eliminate both origination points for T13 (by vacating one and blocking the move from the other), thus

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| T12. 5G | 4 > 9 | F E R N G O U W N L N T N E C F R M R O L F | (neck) |
| T13. 4B | 7 > 11 | F E U R N G O W N L N T N E C F R M R O L F | (fern) |

The next two throws must be

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|---|---|---|---|
| T14. 1F | | F W E U R W N G W N O W L N T N E C F R M R O W L F | (gown) |
| T15. 5I | | F W E U R W N G W N O W L N T N E C F R M F L O O R W | (Rowlf) |

Since it is given in 5I that the same piece makes both the 1-move and 5-move, that must be

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|---|---|---|---|
| T14. 1F | 1 > 2 | F W E U R W N G W N O W L N T N E C F R M R O W L F | (gown) |
| T15. 5I | 2 > 7 | F W E U R W N G W N O W L N T N E C F R M F L O O R W | (Rowlf) |

By elimination

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|---|---|---|---|
| T16. 5E | 9 > 14 | F W E O O U R W N G W N O W L N T N E C F R M F L R W O O | (floor) |
| T17. 1E | 3 > 4 | F O U R O W E W N G W N O W L N T N E C F R M F L R W O O | (our, we) |
| T18. 5F | 4 > 9 | O U R O W E W N F G W N O W L N T N E C F R M F L R W O O | (four) |

Our only remaining 4 (as mandated by the last instruction) is 4A, which will at last reverse our letter string! This 4-attack cannot originate from 4 (this puts a Black piece too early in the track to satisfy the diagrammed final position) or 11 (this would result in an impassible Black block). So

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|---|---|---|
| T19. 4A | 6 x 10 | O O W R L F M R F C E N T N L W O N W G F N W E W O R U O |

By elimination, the next throw is a 5-attack. Using 5D would preclude future use of 5C, and 5C isn't the ankh attack, so

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|---|---|---|---|
| T20. 5C | 7 x 12 | O O W R L F M R F E N N Y P N L W O N W G F N W E W O R U O | (cent, penny) |

And by elimination, the last few steps:

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|---|---|---|---|
| T21. 5D | 10 x 15 | O O E R L F M R F W S S Y P S L S O S E G F S E W E O R U O | |
| T22. 1C | 9 x 10 | O O E R L F M R F W S S Y P S L S O S E G F S B A A O R U O | (ewe, baa) |
| T23. 3B | 10 > 13 | | |

This completes the final diagram, and leaves space 8 as the starting square. Following the 3B instruction gives this array:

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B A A O R U O O O E
Y S S W F R M F L R
P S L E O S E G F S
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Reading column by column gives the clue “Bypass a slower foursome of golfers”, the answer to which is the apt PLAY THROUGH.